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DARK POOLS, FLASH ORDERS, HIGH-FREQUENCY TRADING, AND OTHER MARKET STRUCTURE ISSUES

HEARING

BEFORE THE

SUBCOMMITTEE ON
SECURITIES, INSURANCE, AND INVESTMENT

OF THE

COMMITTEE ON
BANKING, HOUSING, AND URBAN AFFAIRS
UNITED STATES SENATE

ONE HUNDRED ELEVENTH CONGRESS

FIRST SESSION

ON

EXAMINING THE DARK POOLS, FLASH ORDERS, HIGH-FREQUENCY TRADING, AND OTHER MARKET STRUCTURE ISSUES

OCTOBER 28, 2009

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DARK POOLS, FLASH ORDERS, HIGH-FREQUENCY TRADING, AND OTHER MARKET STRUCTURE ISSUES

WEDNESDAY, OCTOBER 28, 2009

U.S. SENATE,
SUBCOMMITTEE ON SECURITIES, INSURANCE, AND INVESTMENT,
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS,
Washington, DC.

The Subcommittee met at 9:32 a.m., in room SD–538, Dirksen Senate Office Building, Senator Jack Reed (Chairman of the Subcommittee) presiding.

OPENING STATEMENT OF CHAIRMAN JACK REED

Chairman REED. Let me call the hearing to order, and I want to begin by welcoming my friend and colleague, Senator Ted Kaufman. Ted has spent a considerable amount of time examining some of these cutting-edge issues facing increasingly high-tech capital markets. And I also want to welcome the witnesses who will join us for the second panel.

As many families struggle to regain their footing, stay in their homes, and keep their jobs in the wake of a severe recession caused by reckless profit seeking on Wall Street, it is appropriate and timely to meet today to ask questions about the role of technology in our financial markets. Today's hearing is a check-up on our equity markets amid concerns that technological developments in recent years may be disadvantaging certain investors.

Electronic trading has evolved dramatically over the last decade, and it is important that regulators keep up. For example, trading technology today is measured not in seconds or even milliseconds, but it in microseconds, or one-millionth of a second. So even a sneak peek of a fraction of a second using what is called a "flash order" may give some market participants a significant advantage.

Our hearing will take a closer look at such flash orders, along with other market structure issues such as dark pools, which are private trading systems that do not display quotes publicly; and high-frequency trading, a lightning-fast computer-based trading technique.

According to the SEC, the overall proportion of displayed market segments, those that display quotations to the public, has remained steady over time at approximately 75 percent of the market. However, undisplayed liquidity has shifted from taking place on the floor of the exchanges or between investment banks to what are

currently known as "dark pools," with the number of such pools increasing from approximately 10 in 2002 to approximately 29 in 2009. Dark pools today account for about 7.2 percent of the total share of stock volume.

Dark pools and other undisplayed forms of liquidity have been considered useful to investors moving large numbers of shares since it allows them to trade large blocks of shares of stock without giving others information to buy or sell ahead of time.

However, some critics of dark pools argue that this has created a two-tiered market in which only some investors in dark pools, but not the general public, have information about the best available prices. The SEC has recently proposed changes in this area to bring greater transparency to these pools.

Flash orders and high-frequency trading have also raised concerns. Flash orders, which enable investors who are not publicly displaying quotes to see orders before other investors, have raised questions about fairness in the markets, and the SEC has recently proposed to ban them. High-frequency trading, a much more common technique used extensively throughout the markets, is the buying and selling of stock at extremely fast speeds with the help of powerful computers. This activity has raised concerns that some market participants are able to game the system using repeated and lightning-fast orders to quickly identify other traders' positions and take advantage of that information, potentially disadvantaging retail investors.

Other investors argue that the practice has significantly increased liquidity in the markets, improved price discovery, and reduced spreads, and that high-frequency trading is being used by all types of investors.

Today's hearing will help to answer some important questions about these issues. Have recent developments helped or hurt the average investor? How have these developments impacted the average household's ability to save for college and retirement? What risks must we be vigilant about in how we structure and operate our markets going forward?

I have asked today's witnesses to discuss the potential benefits and drawbacks of dark pools and other undisplayed quotes now used and historically used in our markets. I have also asked them to talk about flash orders and high-frequency trading.

Finally, as the SEC has recently taken steps to ban flash orders and increase transparency in dark pools, we will hear perspectives on the SEC's actions and ask our panelists what additional legislative or regulatory changes, if any, are needed to protect retail investors and ensure fair markets.

And now let me recognize the Ranking Member, Senator Bunning.

STATEMENT OF SENATOR JIM BUNNING

Senator BUNNING. Thank you, Mr. Chairman. I think this will be an educational hearing about several complex topics that have been in the news lately.

A lot of things have changed in the security market since I sat at a trading desk. Just about all trades take place over computers now. Trading used to be done over the phone or in person. There

are many more stocks and other securities traded now, just as there are many more investors.

But even though the technology and the amount of money changing hands has changed, a lot is still the same. Investors are still looking for the best price, and traders are still using every tool they can to get an edge. And there is always someone trying to make a quick buck off the unsophisticated or uninformed or even through manipulation and fraud.

Historically, the way we have tried to make our markets safer and fairer is by increasing transparency and access, and I think that it has worked. But in order for those principles to continue to work, the SEC must stay on top of the changing markets and update its rules as necessary. I am glad to see the Commission is reviewing its market structure rules, and I hope it does not limit those reviews to just topics that have been covered in the news.

I also hope the Commission will let this Committee know if there are any gaps in its authority that we need to fill so any market structure can be properly addressed.

Thank you, Mr. Chairman. I am looking forward to hearing from our witnesses.

Chairman REED. Thank you very much, Senator Bunning.

Senator Johanns.

Senator JOHANNS. I am going to pass on an opening statement.

Chairman REED. Senator Corker.

Senator CORKER. I do not make opening statements. I would like the Senator to realize that Republicans are here to listen to him and Democrats are not, whatever that means.

[Laughter.]

Chairman REED. We have heard a lot from him.

Senator Gregg.

Senator GREGG. [Inaudible.]

[Laughter.]

Chairman REED. And now it is my privilege to introduce Senator Kaufman. Senator Kaufman is recognized as the chief of staff for Senator Joe Biden for 19 years, but he has also been teaching at Duke University, courses in Congress for 18 years, and he has been a member of the board of Broadcasting Board of Governors for 13 years, and he has trained as an engineer at the University of Pennsylvania and has an MBA from the Wharton School. And before he started working for the Vice President, he worked for DuPont, which I think brought him to Delaware, or kept him in Delaware. So I am very happy to have him here this morning.

Senator Kaufman.

STATEMENT OF EDWARD E. KAUFMAN, SENATOR FROM THE STATE OF DELAWARE

Senator KAUFMAN. Thank you. Thank you, Chairman Reed and Senator Bunning, and I want to thank my Republican friends for showing up for my presentation.

I want to thank you. This is a very important hearing, and I think both your opening statements from my standpoint were excellent in terms of pointing out some of the things that we have to deal with. And I hardly think there are many things that we have to deal with at a time when we are dealing with so many im-

portant things that are really much more important than what is going to happen in this Committee.

I want to keep my remarks brief, but I have a longer statement I would like to submit for the record.

Chairman REED. Without objection, all statements will be made part of the record.

Senator KAUFMAN. Mr. Chairman, our stock markets have evolved rapidly over the past few years, as Ranking Member Bunning said, in ways that raise important questions for this hearing to explore. Technological developments have far outpaced—far outpaced—regulatory oversight, and traders who buy and sell stocks in milliseconds—capitalizing everywhere on very small price differential in a highly fragmented marketplace—now predominate over value investors. Liquidity as an end seems to have trumped the need for transparency and fairness. We risk creating a two-tiered market that is opaque, highly fragmented, and unfair to long-term investors.

I am very concerned that only timely and effective examination, such as what this Committee is going through, which leads to clear and enforceable rules can maintain the integrity of U.S. capital markets, which we all know is an essential component of our Nation's success.

It was the repeal of the uptick rule by the SEC in 2007 which first brought my attention to this issue. When I was at Wharton getting my MBA in the mid-1960s, the uptick rule was considered a cornerstone of market regulation. As many on the Subcommittee have noted, the uptick rule's repeal made it easier for bear traders, bear raider traders—no longer constrained to wait for an uptick in price between each short sale—to help bring down—this activity, I am convinced, helped to bring down Lehman Brothers and Bear Stearns in their final days.

In April, Senators Isakson, Tester, Specter, Chambliss, and I introduced a bill prodding the SEC to reinstate the rule. As the months have gone by, I have asked myself: Why is it so difficult for the SEC to mandate some version of the uptick rule and impose "hard locate" requirements to stop naked short selling? That is not what this hearing is about today, but that is what got me interested. Why has it taken them so long to do it? And that is how I got interested in the issues that you are going to deal with today. It became clear to me that none of the high-frequency traders who now dominate the market, almost 70 percent of the market, want to reprogram their computer algorithms to wait for an uptick in price or to obtain a "hard locate" of available underlying shares. That means basically selling something they do not have, have not borrowed, and do not own. Something that is kind of basic to our markets, you have to own what you are selling.

I began to hear from many on Wall Street and other experts concerned about a host of questionable practices, all connected to the decimalization and digitalization of the market and the resulting surge in electronic trading activity. I am not opposed to electronic trading, but I think we need to take a hard look at what is going on here. It became clear to me that the SEC staff was considering issues piecemeal—like the rise of flash orders, which was in your statements—without taking a holistic view of the market's overall

structure, applying rules from a floor-based trading era—and Senator Bunning was on the trading floor—to the current electronic trading venues in ways that are clearly questionable.

The facts speak for themselves. We have gone from an era dominated by a duopoly of the New York Stock Exchange and NASDAQ to a highly fragmented market of more than 60 trading centers. Dark pools, which allow confidential trading away from the public eye, have flourished, growing from 1.5 percent to 12 percent of market trades in under 5 years.

Competition for orders is intense and increasingly problematic. Flash orders, liquidity rebates, direct access granted to hedge funds by the exchanges, dark pools, indications of interest, and payment for order flow are each a consequence of these 60 centers all competing for market share.

Moreover, in just a few short years, high-frequency trading—which feeds everywhere on small price differences in many fragmented trading venues—has skyrocketed from 30 percent to 70 percent of daily volume. Indeed, the chief executive of one of the country's biggest block traders in dark pools was quoted last week as saying that the amount of money devoted to high-frequency trading could, and I quote, "quintuple between this year and next."

So I am pleased that the Securities and Exchange Commission has begun to address flash orders and dark pools.

Let me quickly lay out three reasons why this hearing is so important:

First, we must avoid systemic risk to the markets. Our recent history teaches us that when markets develop too rapidly, when they are not transparent, effectively regulated, or fair, a breakdown can trigger disaster.

Second, while rapid advances in technology can produce impressive results, they are combined with market fragmentation in ways that are moving us from an investor's market to a trader's market.

Third, we must ensure that retail investors are not relegated to second-tier status. Let me repeat that. Third, we must ensure that retail investors are not relegated to second-tier status. The markets should work best for those who want to buy and hold in hopes of a golden retirement, not just for high-frequency traders who want to buy and sell in milliseconds.

As SEC Chair Schapiro acknowledged just yesterday, and I quote, "I believe we need a deeper understanding of the strategies and activities of high-frequency markets and traders and the potential impact on our markets and investors of so many transactions occurring so quickly."

Technology should not dictate our regulatory destiny; rather, our regulatory policy should provide the framework and guidelines under which technology operates. As values, transparency and fairness must always trump liquidity. Our foremost policy goal must be to restore the markets to their highest and best purposes. Serving the interests of long-term investors, establishing prices that allocate resources to their most productive uses, and enabling companies—large and small—to raise capital to innovate, create jobs, and grow.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Kaufman.

Do my colleagues have any questions?

Senator CORKER. Out of courtesy, I will not ask any, but thank you so much for the testimony.

[Laughter.]

Senator KAUFMAN. Thank you.

Chairman REED. Senator Corker always says the right thing. He is just impeccable. Thank you, Senator Kaufman, for your testimony.

Senator KAUFMAN. Thank you.

Chairman REED. I would call up the second panel.

[Pause.]

Chairman REED. We appreciate your interest in this topic, and we thank you for being here today. All of your statements will be made part of the record, so there is no need to simply read the statement. And I ask you to keep your remarks to 5 minutes so that we can get to questioning pretty quickly. That is 40 minutes this way, as Senator Bunning points out. Let me introduce the panelists and then ask them to begin their testimony.

Our first witness is Mr. James Brigagliano, Coacting Director of the Division of Trading and Markets at the Securities and Exchange Commission. In that capacity, he shares responsibility for the regulation and oversight of securities firms, clearing organizations, and the United States securities markets. Prior to joining the Division of Trading and Markets, Mr. Brigagliano was an assistant general counsel for litigation in the Commission's Office of the General Counsel and began his career in private practice in New York. Thank you.

Our next witness is Dr. Frank Hatheway, and he is the Senior Vice President and Chief Economist at NASDAQ OMX, where he is responsible for a variety of initiatives related to the company's global markets and market structure. Prior to joining NASDAQ OMX, Dr. Hatheway was a finance professor at Penn State University, and he has served as an economic fellow and senior research scholar with the U.S. Securities and Exchange Commission. Thank you.

Mr. William O'Brien is the Chief Executive Officer of Direct Edge, a large U.S. stock market that currently operates as an electronic communications network, a type of alternative trading facility. Prior to joining Direct Edge, Mr. O'Brien held senior management positions at the NASDAQ stock market and Brut ECN.

Our next witness is Mr. Christopher Nagy. He is the Managing Director of Order Routing Sales and Strategy at TD Ameritrade. As such, he is responsible for developing and implementing best execution and order routing strategy for the company. With more than 20 years in the securities industry, he has also worked with NASDAQ Quality of Markets Committee, QMC, the Securities Trade Association Trading Issues Committee, the Options Industry Council Roundtable, among others. Thank you, Mr. Nagy.

Mr. Dan Mathisson is a Managing Director and Head of Advanced Execution Services at the Investment Banking Division of Credit Suisse. Mr. Mathisson joined Credit Suisse in 2000 as a Director of Index Arbitrage. Prior to that, he was the head of Equity Trading at D.E. Shaw, a quantitative hedge fund based in New York.

Mr. Bob Gasser is the Chief Executive Officer and President of the Investment Technology Group. Mr. Gasser was previously CEO at NYFIX, Inc., a global electronic trading execution firm. Before NYFIX, Mr. Gasser was head of U.S. Equity Trading at JPMorgan. Concurrently, Mr. Gasser served on the Board of Directors of Archipelago Exchange as well as on the NASDAQ Quality of Markets Committee and the New York Stock Exchange Upstairs Traders Advisory Committee.

Mr. Peter Driscoll is the Chairman of the Security Traders Association as well as the Chair of the Executive Committee and Co-chair of its Washington Committee. He is also a member of the NASDAQ Institutional Advisory Council. Mr. Driscoll is also a Vice President and Senior Equity Trader at the Northern Trust Company in Chicago, Illinois, which he joined in 2000. Prior to joining Northern Trust, he worked on the floor of the Chicago Stock Exchange from 1975 to 2000, the last 10 years of which he served as the President of Driscoll Trading Group, an institutional floor brokerage firm.

Our final witness is Mr. Adam Sussman, the Director of Research at TABB Group. Mr. Sussman joined the firm in 2004 as a senior analyst, serving as the senior product manager responsible for order management systems, routing, and next-generation trading tools focused on the equities and options markets at Ameritrade, a brokerage industry subsidiary of Ameritrade Holding Corporation.

Thank you, gentlemen, and now, Mr. Brigagliano, please begin.

STATEMENT OF JAMES BRIGAGLIANO, COACTING DIRECTOR, DIVISION OF TRADING AND MARKETS, SECURITIES AND EXCHANGE COMMISSION

Mr. BRIGAGLIANO. Thank you, Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, for giving me the opportunity to speak to you today about the U.S. equity markets on behalf of the Securities and Exchange Commission.

The Commission currently is taking a broad and critical looking at market structure practices in light of the rapid developments in trading technology and strategies. In September, the Commission proposed to prohibit the practice of flashing marketable orders. In general, flash orders are communicated to certain market participants and either executed immediately or withdrawn immediately after communication. Flash orders are exempt from the Exchange Act's quoting requirements as the result of an exemption formulated when most trading took place on the floors of the exchanges.

The Commission is concerned that the exception for flash orders from Exchange Act quoting requirements is no longer necessary or appropriate in today's highly automated trading environment.

The flashing of order information could lead to a two-tiered market in which the public does not have access, through the consolidated quotation data streams, to information about the best available prices for U.S.-listed securities that is available to some market participants through proprietary data feeds.

Last week, the Commission made additional proposals related to dark pools. The first proposal would require actionable indications of interest to be subject to the same disclosure rules that apply to

quotations. The second proposal would lower the automated trading system, or ATS, trading volume threshold for displaying best-priced orders in the consolidated quote stream. Taken together, these changes would help make the information conveyed by actionable IOIs, by dark pools and others, available to the public instead of just to a select group. At the same time, both proposals would exclude from their requirements certain narrowly targeted IOIs related to large orders.

The Commission also proposed to create a similar level of post-trade transparency for ATSs, including dark pools, as exist for registered exchanges. Specifically, the proposal would require real-time disclosure of the identity of dark pools and other ATSs on the public reports of their executed trades.

But these steps are just the beginning. Over the coming months, I anticipate that the Commission will consider additional issues relating to dark liquidity more broadly, perhaps by issuing a concept release.

Another practice that is being examined by Commission staff is high-frequency trading. While the term lacks a clear definition, it generally involves a trading strategy where there are a large number of orders and also a large number of cancellations—often in subseconds—and moving into and out of positions many times in a single day.

High-frequency trading plays a significant role in today's markets by providing a large percentage of the displayed liquidity that is available on the registered securities exchanges and other public markets. Many are concerned, however, that high-frequency trading can be harmful, depending on the trading strategies used, both to the quality of markets and the interests of long-term investors.

We are also exploring ways to assure that the Commission has better baseline information about high-frequency traders and their trading activity. This would help to enhance the Commission's ability to identify large and high-frequency traders and their affiliates.

Another market structure issue that the Commission staff is exploring is sponsored access—also known as "direct market access" or "DMA"—where the broker-dealer members of an exchange allow nonmembers—in many cases, high-frequency traders—to trade on that exchange under their name. Sponsored access raises concerns about whether sponsoring broker-dealers impose appropriate and effective controls on sponsored access to fully protect themselves and the markets from financial risk and to assure compliance with all regulatory requirements. In evaluating these market structure issues, the Commission is focused on the protection of investors, maintaining fair, orderly, and efficient markets, and facilitating capital formation.

Thank you for giving me the opportunity to speak to you today. I am happy to answer any questions you may have.

Chairman REED. Thank you very much.

Dr. Hatheway.

STATEMENT OF FRANK HATHEWAY, SENIOR VICE PRESIDENT AND CHIEF ECONOMIST, NASDAQ OMX

Dr. HATHEWAY. Good morning, Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee. Thank you for the op-

portunity to offer my perspectives on recent developments in U.S. equities markets. I speak as an economist who has studied equities markets for several decades from multiple vantage points—as an options trader on the floor of the Philadelphia Stock Exchange, as a professor at Penn State, as an Economic Fellow at the SEC, and, currently, as NASDAQ's Chief Economist.

The topics before us—dark pools, high-frequency trading, flash orders—represent transformations of the market from an environment where the predecessors of these practices were carried out between people rather than in their current computerized guise. The fundamental economics of these practices are not new. Similarly, the debate over the appropriateness of the latest technology is only new in the sense that the specific technology and the speed at which it operates is new, not the issue of replacing slow with fast or old with new.

As an economist, my remarks are going to focus on what makes a good market, focus on the market as a whole, not on an order-by-order basis or broker-by-broker basis. And because these innovations in the market have historical precedence, we can look at historical criteria for a good market.

A good market is one that maximizes price discovery. That means you bring supply and demand together at a single point. That is what we do as an exchange. We produce information about the price. And markets do this at their best when they are open, when they are transparent and offer everyone a level playing field.

The components that tend to make up a good market are a market that encourages innovation and competition—competition between exchanges and nonexchanges using the best technology available to execute trades at the right price, quickly, cheaply. Automation of trading for clients and market makers has made this process much more efficient than it was in 1984 when I started. Fair and equal access is also important. The markets should reflect everyone's supply and demand.

In 1997, order handling rules ended a two-tier market that existed on NASDAQ and greatly democratized the markets, ultimately taking control of price setting away from market makers and specialists and giving it to everyone who is interested in participating in the market.

Sound regulation is a final critical component. Markets will be rational when trading rules are clear and fair, rigorously enforced, with strong surveillance and compliance. And in my opinion, the best way to do this, to establish an effective market, is to emphasize public orders over private, investors over professionals, a market structure that sets the best possible benchmark by which everyone will trade, a market that facilitates price discovery.

There are negatives to dark pools, and by dark pools, I will use the same definition as Chairman Reed did in his opening statement, that this is a market that does not offer information about its quotes. There are going to probably be different definitions of that today. In economic terms, there is no pretrade transparency into the market. These markets have the potential to isolate limit orders and potentially widen spreads and hurt market quality. As SEC Commissioner Walter wisely said, "Every share that gets executed in the dark does not contribute fully to price discovery. The

question becomes how many dark shares are too many and do I think there is a problem today."

Dark trading has increased in the U.S. over the last year and a half, 2 years, potentially 5 to 10 percentage points across the board. We began looking at this by looking at three NASDAQ-listed Dow stocks: Microsoft, Intel, Cisco. They experienced a steady increase in dark trading and a steady deterioration in their quoted spread, in the benchmark that people use to monitor prices.

Turning from anecdotes, we looked broadly at all the stocks that trade on the NYSE and on NASDAQ. Controlling for factors of influence and spread, we came to a similar conclusion: that as dark trading approaches 35 or 40 percent of volume for active stocks, the deterioration in spread quality becomes increasingly material, on the order of fractions of a cent—three-tenths of a cent to half a cent—but given the narrowness of spreads in today's efficient markets, that is a 10- to 15-percent increase in the width of the benchmark.

Collectively, darkness is harming the market. Individually, dark pools have value. Negotiation is critical for large block orders and always has been. Broker-dealers do this with skill, with capital, and with technology, and need to continue to do so. But these orders need a robust public quote to serve as a benchmark. We support the SEC proposals to reposition dark pools to require public display of actionable IOIs when volume crosses a certain threshold and also to exempt blocks. The SEC proposal prioritizes the public market, transparency, competition, and fair access.

Turning to other topics, we support banning flash orders. We also believe that dark pools and flash orders are wrongly confused with high-frequency trading and algorithmic trading. High-frequency trading and algorithmic trading is automation. It improves efficiency and improves price discovery. It brings competition, fair and equal access to the market, and we do not want to step away from those goals. The market should be open, transparent, competitive, and well regulated. That is what serves investors. Technology employed today means speed and efficiency. We should keep it.

Thank you very much, and I look forward to your questions.

Chairman REED. Thank you very much, Doctor.

Mr. O'Brien, please.

STATEMENT OF WILLIAM O'BRIEN, CHIEF EXECUTIVE OFFICER, DIRECT EDGE

Mr. O'BRIEN. Chairman Reed, Ranking Member Bunning, Members of the Subcommittee, I would like to thank you for the opportunity to testify today on behalf of Direct Edge, the Nation's third largest stock market.

Over the past 2 years, our share of U.S. stock trading has risen from under 1 percent to approximately 12 percent because we have innovated in response to a changing market structure to deliver better solutions for our customers and their customers, the Nation's investors. Certain of these changes have triggered a debate over the past several months regarding the structural integrity of our markets, which is now at a critical juncture. In this regard, the work of the Subcommittee to hold this hearing is both very timely and very valuable.

I believe that through careful examination, appropriate regulatory protections can be preserved without taking steps that would ultimately undermine investor confidence by restricting innovation, competition, or efficiency. I like to structure that belief by offering some guiding principles toward any shape market structure reform should take so we can deal with what really matters, improving our Nation's stock market for the benefit of investors.

First, current market structure is fundamentally fair and sound. By every quantitative and qualitative measure, the U.S. cash equities market serves as a model for the entire world, performing as well as it ever has in terms of liquidity, implicit and explicit transaction costs, and transparency. During the worst financial crisis of our lifetimes, the U.S. equity market operated efficiently, while markets for certain other financial instruments, such as auction-rate securities, mortgage-backed securities, virtually ceased to operate. Recent developments have not materially eroded the efficiency of our marketplace.

While the evolution of technology, functionality, and the economics of trading require everyone to adapt, that alone should not be the root reason for market structure reform. Trends and changes always require a continual analysis of how regulation needs to respond, but this should not be confused with a broader need to rearchitect our market due to any fundamental flaw or unfairness.

Second, high-frequency trading and technology are valuable components of current modern market structure. The innovation and efficiency that technology has brought to stock trading inures to the benefit of every American investor. When decimalization, trading in pennies, came to the markets in April 2001, there was a near total evaporation of traditional capital commitment, with market makers far less willing to provide competitive bids and offers as spreads narrowed. Firms willing and able to adapt to this reality, along with new competitors, rose in their place with business models predicated on extremely efficient use of technology to facilitate our markets.

The benefits of high-tech trading continue to this day in several forms, including more efficient price discovery, lower investor costs, and greater competition, which benefit all investors. All brokers have, in some form, adapted high-frequency technology, to the point that retail investors can have their orders executed in under a second via the Internet from anywhere on the planet.

As with the technological transformation of any market, issues have emerged which warrant close examination and likely new regulation. High-frequency trading strategies are now pursued by unregulated entities who have been given broker-like access to exchanges without adequate controls of the compliance or systemic risks, often called naked access. Exchange products that offer a direct presence at exchange data and trading facilities, called colocation, need to be regulated in a manner as transparent as all other fees. But any evaluation of these issues should start from a productive vantage point that, when well regulated, high-frequency trading and technology are generally healthy and positive.

Second, exchanges aren't always the best place to execute a trade. The over-the-counter and the exchange markets have operated side-by-side for over 30 years to the great benefit of retail and

institutional investors. There are many legitimate economic, execution quality, and policy reasons why investors and their agents seek an off-exchange execution through a dark pool, a market maker, or other means. Exchanges do play a critical role in providing pretrade transparency and price discovery and that benefits those who tradeoff-exchange. If the level of that activity were to drop precipitously below historical norms, a greater examination probably would be necessary, but we are simply not near that point.

To keep exchanges relevant as central hubs of trading interest, however, we need to pursue regulation that doesn't drive the exchange markets and nonexchange markets further apart. Direct Edge pioneered the use of flash order technology precisely to bring retail and other investors access to dark pools that they previously had never had access to. This is what any good exchange does, bringing as many buyers and sellers together in a way that makes sense for all concerned.

True inequities can and should be eliminated, and we applaud the thoughtful approach the Securities and Exchange Commission has taken on this topic to date. But undue focus on optional esoteric order types at the expense of ignoring the broader trends that motivate customers to use these tactics, at a minimum, provide only false comfort to investors and potentially leave them more at risk than ever before.

Fourth, brokers are those best equipped to decide how to execute customer orders. Every order type offers a range of explicit-implicit costs and other features. Brokers are best suited to decide how to use the tools that exchanges provide in executing their orders. Delegation of this responsibility by an investor to their broker is a cornerstone of our capital markets. While each broker brings their own perspective and execution strategy to the table, investors are free to choose among scores of reputable brokers with data that is better than ever before.

Fifth, equal access prevents two-tiered markets. The broader range of technologies and products that brokers have at their disposal is greater than ever. Every broker does not do everything the same way, at the same speed, or with the same resources. Brokers choose which exchanges to be members of and which products of those exchanges to use. Investors participate by choosing their broker and choosing the level of self-direction they engage in. When a broker elects to use a certain functionality, it does not imply that those who do not are somehow unfairly disadvantaged. Markets do need to be fundamentally fair, but that is not achieved on the basis of attempting to mandate that everyone has substandard but equal capabilities.

Sixth, in debating the need for reform, a data-driven approach is optimal. The National Market System Amendments of 1975, the Order Handling Rules, and Reg NMS were all successful because of their comprehensive approach. When considering market structure reform, a big picture approach that values objective data over subjective intuition or allegation is highly preferable. To do otherwise could alter a market structure that is generally performing well without adequate basis for believing that improvements will make it even better.

Our stock market is the model for the entire world because we anticipate and implement change better than anyone, and adapting regulation is a key element of that. If we can address these outstanding issues in a constructive fashion, we will have provided a strong structural foundation for our Nation's economic recovery to be realized upon.

Thank you for the opportunity, and again, I look forward to your questions.

Chairman REED. Thank you very much.

Mr. Nagy.

STATEMENT OF CHRISTOPHER NAGY, MANAGING DIRECTOR OF ORDER ROUTING SALES AND STRATEGY, TD AMERITRADE

Mr. NAGY. Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, thank you for allowing me the opportunity to testify on equity market structure.

I am Chris Nagy, Managing Director of Routing Strategy with TD Ameritrade. TD Ameritrade, based in Omaha, Nebraska, was founded in 1975 and was one of the first firms to offer negotiated commissions to individual investors. Over the course of the next three decades, TD Ameritrade pioneered technological changes, such as touchtone telephone trading and Internet investing, to make access by individual investors more accessible, affordable and transparent. TD Ameritrade has long advocated for market structures that create transparency, promote competition, and reduce trading costs for individual investors.

As technology rapidly advances, it is ever more important that the SEC complete a comprehensive review of the national market system to ensure individual investors are not adversely impacted. At the same time, regulation has the potential to result in unintended consequences, making it critically important that rulemaking be based on empirical data and reasoned analysis.

Our Nation's stock markets have evolved dramatically over the course of the last decade. In 2001, the average individual investor transaction took upwards of 18 seconds to receive an execution, while today that same transaction is done in less than 1 second. These changes have been driven primarily by technological innovation, but also in response to carefully crafted regulations.

In addition, the move to decimalization early in the decade reduced spreads by up to five-and-a-quarter cents, whose benefits went largely into the pocketbooks of individual investors.

In fact, today, the individual investor enjoys superior pricing, lightening fast trade execution, fulfillment, and ample liquidity in the markets. At no other point in the history of the markets has the individual investor been closer in terms of pricing to that of the institutional trader.

Variations of dark pools have been in our markets for decades, taking on various forms from a broker taking an order over the phone to a floor broker acting as agent. When Regulation NMS was enacted in 2005, exemptions to the display rule were granted, spawning the creation of the modern day electronic dark pool. This market dynamic has given rise to well over 40 alternative trading systems, transacting by some estimates upwards of 35 percent of all stock market orders each day.

Retail clients have little ability to react or interact with these pools of liquidity. The irony is that dark orders receive their pricing from the transparent exchanges where the retail clients are. In many ways, dark pools are an excellent example of a two-tiered market that gives institutional traders a way to use retail order flow to their own benefit.

While the benefits of dark pools to reduce overall market impact are there, serious questions need to be asked if we have reached the tipping point. Conversely, innovative strategies that promote efficiency and reduce investor costs in the markets are critical if we are going to continue to level the playing field for individual investors.

There has been much fanfare that flash trading is harmful to retail investors. However, little data is offered to back these claims. Defenders of flash argue that it allows users to lower transaction costs and obtain better prices in the both equity and options marketplaces. Although TD Ameritrade can find no evidence that flash trading harms individual investors, our firm believes that flash is a symptom of our current market structure, and in many ways the perception that it is unfair and predatory became the reality.

As we embark on an overhaul of our Nation's markets, it is imperative that we continue to provide a low-cost, competitive infrastructure that ensures individual investors have low barriers to entry, which in turn promote investor confidence. We must, however, ask if we have reached the tipping point with an excess of alternative trading systems.

Interestingly, we can draw insight from a very different yet similar circumstance. During the Great Depression, there was an overabundance of taxi drivers, which reduced driver earnings and congested city streets. To address the issue and restore proper balance, the Medallion system was created, placing a moratorium on the issuance of taxicab licenses. This system created the proper balance of taxis while not crowding the city streets.

In today's markets, as we emerge from the recent market downturn, one must question if we have too many taxis fragmenting our streets of liquidity. We should seek a solution to provide competition in our markets without an over-surplus of trading systems.

I appreciate the opportunity to appear before the Subcommittee, not only on behalf of TD Ameritrade, but more importantly, on behalf of our clients' individual investors. Thank you.

Chairman REED. Thank you very much.

Mr. Mathisson, please.

STATEMENT OF DANIEL MATHISSON, MANAGING DIRECTOR AND HEAD OF ADVANCED EXECUTION SERVICES, CREDIT SUISSE

Mr. MATHISSON. Good morning and thank you, Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee for giving me the opportunity to share my views on the best structure for our Nation's stock market.

My name is Dan Mathisson. I am the Managing Director at Credit Suisse. The U.S. subsidiary of Credit Suisse, which is formerly known as First Boston, has been operating continuously in the United States since 1932. I run a unit called Advanced Execu-

tion Services, which is a team of approximately 200 financial and technology professionals headquartered in New York. We execute trades electronically on behalf of mutual funds, pension funds, hedge funds, and other broker-dealers. Credit Suisse trades approximately 1.2 billion shares a day, or about one out of seven shares traded in the U.S. this year. We also own and operate the largest dark pool by volume, which is called Crossfinder.

On the topic of dark pools, we believe that despite their unfortunate name, dark pools are beneficial to long-term investors and occupy an important niche within our market structure. We believe investors have a right to remain silent and that dark pools merely automate a trading methodology that has always existed.

We believe that much of the debate over dark pools has not been properly focused. Long-term investors typically make decisions based on corporate fundamentals, while short-term traders typically make decisions based on interday trading information, such as displayed orders. Those who would compel dark pools to display their bids and offers in real time or to reveal ATS identities in real time are helping precisely the wrong side. Who would benefit from additional quantitative information hitting the tape in real time, fundamental long-term investors or short-term information-based traders?

Given the fears that already exist that high-frequency traders are somehow taking advantage of the existing electronic information, isn't it ironic that we are considering mandating a slew of new very sensitive trade data to be delivered to them in real time?

Now, some have questioned whether dark pools damage price discovery in the markets. Despite popular belief, dark pools must report all their trades immediately to the consolidated tape. They are a valuable source of last trade data. In addition, it should be noted that dark pools only make up approximately 7 percent of U.S. stock volume. Dark pools will likely always remain a niche trading product and will not lead to the end of publicly displayed bids and offers.

But there is a problem with dark pools and that is regarding equal access to them. Under Regulation ATS, dark pool operators are allowed to decide who can participate in their pool. Broker-dealers are sometimes denied access to each other's dark pool for competitive or capricious reasons, meaning that investors cannot be guaranteed access to the entire marketplace currently.

We believe that markets work best when they are open to all, and therefore, we propose that the fair access provision of Reg ATS be changed to force all dark pools to be open to all broker-dealers, and through those broker-dealers to the entire investing public.

On the topic of high-frequency trading, there is no clear definition of the term, making it very difficult to analyze its effects or estimate what percent of the market it is, resulting in what appear to be wide overestimates of what percent of the market high-frequency trading makes up. We believe the focus at this point in the debate should be on creating a clear definition so that analysts and academics can perform rigorous studies and we can separate the facts from the conspiracy theories.

Regarding the issue of whether high-frequency firms have an unfair advantage over others, we believe that disparities that result

from differentiated levels of investment and technology are natural and occur in any industry. It is only unfair if the opportunity to build similar technology doesn't exist for some. We have seen no evidence of anyone being denied the opportunity to build a high-frequency trading system as of yet.

In summary, we believe that the key to a strong and resilient stock market is a healthy competition for order flow among multiple venues, both dark and light, along with mandated fair access to each of them. We believe that if all broker-dealers have fair access to all venues, then all investors, whether institutional or retail, would have an equal opportunity to get the best price.

Thank you again for inviting me to participate in today's hearing and I very much look forward to your questions.

Chairman REED. Thank you.

Mr. Gasser, please.

STATEMENT OF ROBERT C. GASSER, PRESIDENT AND CHIEF EXECUTIVE OFFICER, INVESTMENT TECHNOLOGY GROUP

Mr. GASSER. Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, thank you for the opportunity to testify this morning on current issues affecting U.S. market structure. My name is Bob Gasser. I am the CEO of Investment Technology Group. As a fully transparent and neutral player in the industry, I would like to offer ITG's unbiased, fact-based perspective on these issues to help you better understand the current trading landscape.

ITG is a New York Stock Exchange listed company with 18 offices across 10 countries employing nearly 1,300 people worldwide, and nearly 900 here in the U.S. As a specialized agency brokerage firm, ITG provides technology to a broad collection of the globe's largest asset managers and hedge funds, allowing them to independently source liquidity on behalf of their clients. Throughout our 22-year history, we have run our business in the best traditions of U.S. innovation and market leadership.

In 1987, POSIT was launched as one of the first dark electronic matching systems. Since then, ITG's POSIT crossing system has harmoniously existed within U.S. market structure, including the Reg ATS and Reg NMS frameworks in more recent years. We firmly believe that institutions need a place to confidentially interact with each other to find natural block liquidity. Nondisplayed pools of liquidity, such as POSIT, provide a valuable solution for the buy side to comply with their obligations as fiduciary to offer their clients the best possible execution. Our analysis of millions of institutional trades post the advent of Reg NMS confirms that POSIT reduces market impact of block trades and enhances execution quality.

In my testimony today, I will begin by addressing the role of dark pools and other undisplayed quotes historically in our markets. I will outline the advantages nondisplayed pools of liquidity provide for the marketplace. Finally, I will provide our views on several topics that seem destined for further regulatory scrutiny, sponsored access and exchange colocation.

Contrary to the pejorative name, dark pools have played a positive role in the transformation of the U.S. equity markets over the

past decade. As SEC Commissioner Kathy Casey herself points out, there is nothing sinister about dark pools. They exist for legitimate economic reasons. Institutional investors seeking to make large trades have always wanted to avoid revealing the total size of their order. This, in turn, benefits the millions of individual investors who invest in mutual funds and pension plans. Without a facility like POSIT, institutions with a natural interest in trading with one another would be subject to unnecessary frictional cost.

We wholeheartedly embrace and support the broad concepts the SEC highlighted during its open meeting last Wednesday. The staff of the SEC's Division of Trading and Markets exercised a tremendous amount of care and diligence in their examination of current U.S. market structure. We interpret the SEC's recent pronouncements as establishing a bright line between truly dark pools and lit pools, with an exception for block liquidity. We welcome the clarity. As a truly dark pool, POSIT will continue to provide large executions and price improvement to its customers.

Academic research demonstrates that market fragmentation, including the proliferation of dark pools and other off-exchange trading venues, does not harm market quality. We support efforts to increase post-trade transparency so long as the rules are applied consistently across the competitive landscape. In fact, we believe that the data arising from such transparency will better enable market participants to measure the quality of the executions that they receive from the various trading venues, thus enabling them to make better routing decisions in the future.

We do have concerns about sponsored access and the risk it potentially creates for market participants. Sponsored access generally refers to the practice of a broker-dealer member of an exchange providing other market participants, possibly nonregulated entities, with access to that market center without having the sponsored participants order flow flow through the member systems prior to reaching the market center. One of the concerns associated with sponsored access is that the service can be provided without rigorous compliance oversight and/or appropriate financial controls. We believe that the issue of sponsored access firms deploying high-frequency strategies on behalf of nonregulated entities deserves regulatory scrutiny.

On the topic of exchange colocation, U.S. exchanges have logically become mission critical technology providers to the brokerage industry. They now host brokerage firms within exchange-owned and operated data centers and provide access to the circulatory and respiratory system of today's national market system, market data and the matching of executed trades.

It is our hope that the SEC will provide similar clarity on the issue of colocation within exchange data centers in a future concept release. No firm should enjoy an advantage over another firm based on physical proximity to exchange technology. Principles of fair access and transparency must be applied equally to this issue.

While we support the SEC's recent proposals, we are wary of the dangers of unintended adverse consequences for market structure. We note that Reg ATS and Reg NMS did produce the competition that they were intended to foster without compromising investor protection. The increased competition evidenced by the existence of

approximately 40 execution venues in the U.S. market has reduced transaction costs and increased execution speeds without degrading the transactional or informational efficiency of the U.S. equity markets. To the contrary, U.S. market systems withstood the demands of unprecedented volatility and transaction volumes through the financial turmoil of last fall with remarkable stability and resiliency.

The confidence that global investors have in the efficiency of the U.S. national market system is well placed. This confidence is essential to U.S. leadership in the formation of capital. All of our collective efforts toward structural reform must focus on the preservation of this confidence.

Thank you, Mr. Chairman, and we look forward to your questions.

Chairman REED. Thank you very much, Mr. Gasser.

Mr. Driscoll, please.

STATEMENT OF PETER DRISCOLL, CHAIRMAN, SECURITY TRADERS ASSOCIATION

Mr. DRISCOLL. Chairman Reed, Ranking Member Bunning, Members of the Subcommittee and staff, thank you for the opportunity to testify at this important hearing on behalf of the Security Traders Association. I am Peter Driscoll, the Senior Equity Trader at the Northern Trust and Chairman of the Security Traders Association. I am here today representing the STA, where we provide a forum for our traders to share their unique perspective on issues facing the securities markets.

Today's individual investor trades in markets that are characterized by narrow bid-ask spreads, low commissions, and immediate execution of trades. It is, however, important to realize that the majority of savings and investments are institutionalized, invested through savings plans at work, 401(k) plans, and the like. Institutional investors also value low commissions, tight spreads, and competition. The size of these aggregated orders also requires us to identify deep pools of liquidity where we can secure the best possible execution of larger orders.

The U.S. equity markets functioned extremely well during our recent economic crisis. The markets remained open. Security prices accurately reflected the equilibrium between buyers and sellers at the moment of execution.

The SEC recently held a meeting where it voted to issue rules intended to strengthen the regulation of dark pools. These rules were issued in the regular notice and comment rulemaking process, affording all market participants the opportunity to comment on the rules. The STA feels that the process is the best way to uncover the unintended consequences the proposed rules may have prior to it causing any market disruptions.

Undisclosed liquidity has been part of the market since their inception. In fact, many believe the New York Stock Exchange was the largest dark pool. Floor brokers working large orders traditionally posted only a small percentage of those orders in the publicly displayed quotes. The advent of decimalization and electronic trading required participants to find alternative ways to execute their orders. Reg ATS made it easier for investors' orders to execute without the participation of a dealer. At the same time, it allowed

restricted access to some trading venues and decreased the transactional data available to investors. As such, the STA believes it is appropriate for the Commission to evaluate dark pool access and transparency standards.

Many believe alternative liquidity pools provide efficiency by lowering execution costs and providing competitive choices in the execution process. Some believe trading in dark pools degredates the price discovery process. We do not feel dark volumes trending around 10 to 15 percent of overall volume are anywhere near that degradation point. As with most things in life, moderation is a key.

An efficient market structure can include alternative liquidity pools and public quoting venues coexisting. The STA does not believe limiting dark pools to *de minimis* percentages of volume is the appropriate answer. Should the SEC determine that too much volume is trading in these dark pools, the standards that ATSs must adhere to should be updated and competitive pressure should be allowed to solve the problem. Increasing access and transparency is the answer.

Once a dark pool decides to broadcast information beyond their own members, that information should be publicly distributed. This transparency must be increased without jeopardizing the pool participants' anonymity. The STA has long held that similar products should be regulated by consistent rules. The regulatory gap between ATS regulation and exchange regulation should be rationalized. Balancing regulations will allow all venues to compete more robustly.

Our 2008 report raised concerns about businesses being built solely to capture rebates from maker/taker models and market data plans. We remain concerned about the distortive effects these businesses could have on issues by issuing quotes and trades without investment intent. STA suggested the SEC adjust the market data revenue allocation formulas to only reward quality and tradable quotes. This remains good advice.

Sponsored access must include appropriate trade risk management controls. Allowing naked access to markets in today's interconnected market is undesirable from both an industry and regulatory perspective. There is nothing unfair in colocation as long as the access is provided to all who desire it at a reasonable cost. Last week, two trading venues voluntarily accepted Commission oversight of their colocation plans, and we feel that this was a great step forward in the regulation of these plans.

The SEC needs the resources to upgrade their technology and hire more people to surveil today's markets. Trying to monitor 35,000 registered entities with 3,000-some-odd staff members seems a daunting task.

We underscore the importance that changes to the current regulatory framework need to be done in a deliberate and carefully considered manner. If rules are adopted, pilot programs should be used whenever possible to insure against the possibility of market disruptions. We also emphasize the need for the SEC and Congress to avoid picking winners and losers and to allow competition and innovation to drive the market changes when possible. Thank you.

Chairman REED. Thank you, Mr. Driscoll.

Mr. Sussman, please.

STATEMENT OF ADAM C. SUSSMAN, DIRECTOR OF RESEARCH, TABB GROUP

Mr. SUSSMAN. Chairman Reed, Ranking Member Bunning, Subcommittee Members, thank you for holding these hearings. Although I believe that U.S. equity markets are the standard for market efficiency and investor protection, as my wife likes to remind me, there is always room for improvement, and I am glad to be a part of that process.

When I began in this industry in 1998, I worked for a young retail online brokerage outfit. I was in charge of routing their orders, designing the logic for their orders, and not only would execution take minutes, but also there was a great deal of uncertainty as to the status of the order. Clients would call up asking what is going on with that order and we couldn't even tell them what was going on because of the lack of transparency in the markets.

When I left in 2004, execution times were reduced to seconds and order status was no longer an issue. This is the result of a great deal of regulatory and technological process that we have made since then.

Now, as Director of Research at TABB Group, a financial markets research and consulting firm, we are an organization that is dedicated to helping folks understand this changing trading landscape. Our clients and contacts span the entire investment community, including pension plans, retail brokers, mutual funds, hedge funds, high-frequency traders, exchanges, brokers, and dark pools.

Some of the research I am going to talk about today is based on detailed conversations with head traders at traditional asset management companies that represent 41 percent of our Nation's institutional U.S. equity assets.

Now, these folks are the ones that are tasked with the responsibility of overseeing the safe handling of our orders, the orders that reside that come from pension funds, from mutual funds, from 529 plans, and our hard-earned savings, and they have a fiduciary obligation to balance the tradeoff between price and time. As some of my copanelists mentioned, this isn't just about price formation. This is about the proper handling of orders, and in some cases, you have an order that you need to get executed right away.

If you need to get that order executed right away, you are going to broadcast that to as many folks as possible in order to attract willing counterparties. However, if the order is sensitive to price, you need to keep that order tighter to your—you need to play those cards a little bit tighter. Any information that leaks out about that order could cause the price of the stock to move against you and thus harm your investors.

So they have always had to make these choices, and it is never as clear as just shouting from the hilltops or making barely a whisper. There are a lot of degrees in between. And so for price sensitive orders, they have always used dark liquidity.

Now, in the past, that dark liquidity may have been calling up a floor broker at the New York Stock Exchange where they would discuss the parameters of these orders—size, price, how urgently does it need to get done—and then that floor broker, on behalf of that trader, would go out to the floor and seek that liquidity out. Nowadays, those same instructions are encoded in electronic mes-

sages and sent to the various marketplaces that are available, but the intention is the same.

The challenge is that there was a value in that floor broker. The relationship between the trader and the floor broker was based on trust. It was based on a kinship that was built up over time. In an electronic world, how do we build that trust and confidence up?

At TABB Group, we believe that is with more disclosure, more openness about the trading practices. That is why we believe that dark pools should be more public about their types of participants they have in their pools, the mechanisms they use to execute plan orders.

Now, a lot of progress has been made on this front. In a recent study that we conducted with those traders I mentioned earlier, 71 percent now say that they are comfortable with the practices that take place in these dark pools. That is up from 53 percent in 2008. So clearly, the dark pools on a voluntary basis have been out there trying to educate the clients.

However, we do think that there needs to be more work done here. We believe that that information should be public. We believe it should use standardized terms so we can easily compare the practices across these dark pools and that regulators have a better chance of ensuring that these disclosures actually match the actions that take place within these dark pools.

However, I want to distinguish between this type of disclosure about practices and the real-time identifiable reporting of trading volume that was recently proposed by the SEC. We believe that any real time identifiable reporting of dark pools would hinder the institutional traders' fiduciary obligation to protect the orders that come from a large portion of our investor public.

Just quickly, I want to touch on high-frequency trading, because we really believe that these are just today's intermediaries. We used to call them market makers and specialists, but because of the automated high-speed nature of today's markets, anyone that wants to be an intermediary has to execute in a high-speed fashion. And so when an institutional trader wants to get an order done, they are likely to be interacting with a high-frequency trader. Now, we do think it is incumbent on high-frequency traders, which often shroud themselves in secrecy, to be more forthcoming about their activities and be more involved in trying to improve our market structure.

I could talk on these issues for many more minutes, but I have already overrun, so I will just wait for your questions. Thank you very much.

Chairman REED. Thank you, Mr. Sussman. Thank you all, gentlemen, for testimony that was very thoughtful and also very helpful to us. As some have indicated on the panel, we are just beginning deliberations as technology becomes more evident and the impact of the market is more evident.

We will do 7-minute rounds. I anticipate a second round, but I want to get somewhat quickly to my colleagues.

Let me start with Mr. Sussman and ask the panel one question, and we will let the SEC conclude. What are the several—one, two, three big challenges that this new technology poses to regulators? As you indicated, several individuals indicated, this practice has

been going on as long as there have been markets trading without publicizing the price. But what are the dangers, the three biggest challenges? The SEC has to maintain fair and orderly markets. What are the three issues that might affect that? Mr. Sussman, and then right down the line.

Mr. SUSSMAN. Yes, thank you. That is a great question.

For the institutional trader, it is knowing what is going on with their order. In today's electronic markets, there are so many different types of software that they use in order to execute their orders, it is difficult for them to keep up with what is actually happening with their orders. They need to use these tools in order to efficiently interact with the marketplace, you know, in order to efficiently distribute their orders trading against other institutional investors, trading against high-frequency traders.

But the issue is how much do they really understand about the algorithms and the dark pools that they are handling. You know, sometimes they feel overburdened by the amount of information that they have to keep track of in order to execute these orders.

But I do not think that they would, you know, ask for anything else. I mean, this is a challenge that they accept wholeheartedly as a part of their job, and they would rather have the responsibility of understanding these pieces, you know, rather than some regulatory framework force them to act one way or another. You know, freedom is obviously a responsibility as well as a right, and they accept that challenge.

Chairman REED. Thank you.

Mr. Driscoll, please.

Mr. DRISCOLL. Following on what Mr. Sussman said, at the Security Traders Association several years ago, we were concerned about the lack of knowledge on how institutional orders were being routed through these dark pools, and we set about a survey of the dark pools to try to discover how orders were routed, why they were routed, and where they were finally executed.

We ran into quite a bit of trouble getting those answers. It seems that there was a lot of confidentiality clauses that prevented pools from talking about where their orders were executed. A lot of legalistic roadblocks. We again early this year attempted to map liquidity and ran into similar roadblocks.

So I would strongly emphasize that we are the ones sending the orders to these dark pools, and it is our right to know how these orders are executed and handled, and we have to have that transparency so that we can provide best execution for our clients. Transparency in the order routing process is extremely important.

I would think that another one of our big concerns is the process in which rules are promulgated. We feel very strongly that regular notice and comment rulemaking is the right procedure, and I would also say that the SEC is doing a fantastic job trying to promote the transparency and fairness in markets.

Chairman REED. Mr. Gasser, please.

Mr. GASSER. Thank you, Mr. Chairman. I think there are a couple of challenges here that I think are interesting ones and, from the perspective of a fact-based approach, I think provide more complexity to the question set up and asked of the panel.

One is the issue of surveillability. With 40 liquidity pools by most estimates now in operation in the U.S., how do you bring that all back together? And I think that the proposal that the Commission has put in place and the concept release around the disclosure of transactions I think is—as I said in my testimony, I think it is an important step in that direction. So surveillance I think is a big challenge, and clearly the Commission is taking some proactive steps, I think, to improve that.

There has been, obviously, a lot of discussion here about high-frequency trading. The question there is high-frequency traders are important providers of liquidity to the market today. One panelist had made the analogy to the days of the specialists and the market maker. These guys have replaced those folks, we would say in a much more transparent way, actually, than existed in the past. But the question becomes: What is a reasonable liquidity provision *versus* sometimes manipulation of prices and markets?

Clearly, the high-frequency traders that are regulated, there is obviously a tremendous amount of transparency available to the regulators in terms of their practices, and so we think that there is a significant amount of attention, deservedly, on that particular issue.

To the point of a two-tiered market, I think one of the issues of complexity that has arisen here is—and when I say two-tiered market, I am not talking about institutional *versus* retail. What I am referring to is the notion of folks that have information and folks that do not have information. And this notion of creating a virtual marketplace of dark pools that selectively IOI to each other, indicate out to each other, I think is also deserving of quite a bit of scrutiny going forward. And as Pete alluded to, it is sometimes very difficult to get to the bottom of exactly what is going on out there in terms of this virtual linkage.

One great benefit of the current environment that we are operating in—and it is great that you bring more light to this topic—is that institutions are more sensitive to the issues we are discussing today than they ever have been. So the best practices now have been elevated amongst institutions in which they are sending out questionnaires, asking very, very granular questions about the practices that we as broker-dealers deploy on their behalf. And so sunshine is the best disinfectant here, and so I think, you know, the free market certainly is at work.

Chairman REED. Thank you very much. I want to yield to Senator Bunning so he has a chance. We will do a second round. I will pick up with Mr. Mathisson and ask the same question and give you more opportunity to think through it. Senator Bunning.

Senator BUNNING. Thank you. I want to start with the SEC.

First of all, the question I pose to you is not one of—it actually is not a question. It just is a feeling that the American people have. It seems to me that the SEC has all the power to address the market structure issues that we are talking about today. Or does the SEC feel that Congress needs to give them more authority?

Mr. BRIGAGLIANO. Thank you, Ranking Member Bunning. We have indeed considerable authority to address most of the market structure issues we have talked about today, and I should point out that the legislative initiatives currently in Congress with respect to

bringing over-the-counter derivatives into the regulatory tent and with respect to the regulation of hedge funds are important adjuncts to our authority.

With more specificity on the trading structure, we currently have a large-trader authority, and we are working on possible proposals to better identify large traders so that we can see who is trading, who the principals are, who their affiliates are, get better information for time, get a better audit trail. But it may be that enhanced authority to require registration of some of these traders would be helpful as well.

Senator BUNNING. OK. What steps are you taking to ensure fair access for everybody to dark pools?

Mr. BRIGAGLIANO. Senator Bunning, with respect to dark pools, as you know, we thought that addressing the two-tiered market and the access to the best price information of orders was step one.

Senator BUNNING. But why should somebody be excluded? That is my basic question. In other words, there are dark pools that certain people get in and certain people do not. Why should somebody be excluded?

Mr. BRIGAGLIANO. Senator Bunning, that is an excellent question. One reason could be, for example, if a dark pool caters to large-size traders, to mutual funds and pension funds, it may well want to monitor the more predatory traders, if you will. People who are going to try to front-run those larger orders do not get in.

At the same time, when the Commission issues its concept release in looking at dark pools more broadly and ATSs, I would expect it to include a discussion, a broader discussion, as you suggest, of fair access.

Senator BUNNING. OK. This is for everybody, but I am going to start with Mr. Driscoll and Mr. Nagy. Quickly, do you think identifying a trade on the tape as coming from a specific dark pool would affect prices in that stock?

Mr. DRISCOLL. I do not think it would affect prices in that stock. I do think that it would affect the institutional traders' order routing decisions. It would give them more information as to where the stock was actually trading and help us——

Senator BUNNING. Well, if I am Fidelity and I have 100,000 shares, obviously I am not going to sell 100,000 shares. I am going to give it to a broker and say, "Break it down. Do 300, 300, 500, 800." And, obviously they have enough wherewithal to do that. They are not going to trade 100,000 shares, and they are not going to show 100,000 shares.

Mr. DRISCOLL. In the old days, that would be true. In today's market, I have the technology on my desk to break that order down and route it——

Senator BUNNING. That is exactly right.

Mr. DRISCOLL. And you are right. Unless the portfolio manager has made the investment decision to execute that order at one time——

Senator BUNNING. In other words, to show it.

Mr. DRISCOLL. Well, we probably would not show it in that case, anyway. We would probably go and get a capital commitment from one of our broker-dealers.

Senator BUNNING. Well, but, see, in my opinion, I think all trades should be put on the tape.

Mr. DRISCOLL. Absolutely. We concur wholeheartedly with——

Senator BUNNING. As soon as the trade is made, it should be put on the tape so everyone can see it.

Mr. DRISCOLL. In today's marketplace, the trades do hit the tape right away. It is just a matter of——

Senator BUNNING. I do not think we should identify the person that is making the trade.

Mr. DRISCOLL. We would respectfully request that that information be made available on a delayed basis so that our information could not be used by somebody who would like to take advantage of it.

Senator BUNNING. Mr. Nagy.

Mr. NAGY. Ranking Member Bunning, thank you. It is interesting because the little guy, the retail client, is literally forced to have their trade printed to the tape immediately upon that transaction occurring.

Senator BUNNING. But that is not—a hundred, five hundred shares, a thousand shares is not going to affect the market.

Mr. NAGY. That is true. Conversely, large institutional trades are not required—especially in the dark pool, it is not required to be printed right away. The benefit to that is that——

Senator BUNNING. Well, I disagree with that, so, you know, I am—I think they should be.

Mr. NAGY. What I am saying is that I do believe that dark pool trades, institutional trades, should be printed to the tape.

Senator BUNNING. The time the trade is made should be on the tape.

Mr. NAGY. For the benefit of transparency in the marketplace——

Senator BUNNING. Yes.

Mr. NAGY. Yes, I think that is absolutely important and paramount to ensure that we do not precipitate a two-tiered market structure in our system.

Senator BUNNING. OK. I agree.

Mr. MATHISSON. Just to throw in a factual correction, dark pools do have to print the trades immediately to the tape in the current structure.

Senator BUNNING. That is what I thought. But you do not identify either side.

Mr. MATHISSON. No. That is correct. That is not identified. It is anonymous as to who traded it or which company or dark pool put it up.

Senator BUNNING. OK. I only have one more question left. I have got lots of questions, but I only have time for one. One thing I did not see mentioned in any of your testimony is liquidity rebates or so-called "maker-taker" pricing designed to draw order flow. Is the Commission going to look at these practices, especially in regards to high-frequency traders that make a big part of their business collecting these fees that are ultimately paid by investors through higher costs?

Mr. BRIGAGLIANO. Senator, Ranking Member Bunning, I note that when the Commission adopted Reg. NMS, it effectively capped

those maker-taker rebates at three mils. At that time, there was significant comment suggesting that the maker-taker model did encourage display in liquidity, which could be salutary. Nonetheless, as the Commission looks further at high-frequency trading in its concept release, it would make sense to look at the impact of particular market pricing models on trading behavior.

Senator BUNNING. Thank you very much.

Thank you, Mr. Chairman.

Chairman REED. Thank you, Senator Bunning.

Senator Corker.

Senator CORKER. Mr. Chairman, thank you, and I thank each of you for your testimony.

I am trying to develop some kind of consensus with all of you who are testifying, and, again, thank you for being here with the vast amount of knowledge you have. I do not hear anybody—the notion of high-frequency trading, nobody here really has an issue with that, right? I mean, it is the way the market is made today; it is done electronically. Does anybody have a problem with high-frequency trading? I just want to sort of move that one off the table. I have not heard any complaints about the issue of high-frequency trading.

Mr. DRISCOLL. Senator, I would like clear up a notion that was addressed earlier. At our conference, our annual conference, Seth Merrin did say that high-frequency trading could quintuple over the next decade. But he also followed that up by saying that he had no facts to back that up and he should not be quoted on it. I think a lot of times——

Senator CORKER. But he is quoted again.

Mr. DRISCOLL. Yes. I think a lot of times, you know, numbers are tossed out there without any substance or empirical evidence of them, and that makes us concerned.

I would also say that as far as high-frequency trading goes, it is my job to stop the people that are trying to take advantage of my orders. When I have an order working and I see it is starting to move up because high-frequency traders have sniffed it out, I will remove that order from the marketplace and wait until it reverts to where I want to buy the stock or sell the stock. So it is part of the job of the institutional trader to trade against these people.

Senator CORKER. But there is no problem that—there is no essential problem with the fact that high-frequency trading exists to create price discovery and——

Mr. NAGY. Senator, just to note on that, I would say that one issue we would have in terms of high-frequency trading would be more of one with capacity utilization. What is commonplace with high-frequency trading is that there is typically a very large number of orders that are submitted to anyone particular entity. At the same time, there is equally a very large number of cancellations that are submitted. What that leads to is very low fulfillment rates. That effectively creates many, many quote changes out there that may or may not be necessary and unnecessary in the marketplace. For example, a high-frequency trader puts a price out there, then immediately removes that price; puts a price out, immediately removes that price. The infrastructure that is built upon distributing those quotes, of course, is taxed in that regard, so the question is:

How are those fees distributed in terms of the market data costs and getting that to the retail investor? And how does that impact market data? And I do not think today that those costs are fairly disseminated amongst the marketplace.

Senator CORKER. Any response to that, SEC?

Mr. BRIGAGLIANO. Yes, Senator Corker. As with other strategies and technologies, high-frequency trading may well have both benefits and raise concerns, and we have heard the benefit about increasing liquidity. But concerns that we will look hard at as we develop further audit trails and get into a deeper dive in our concept release, for example, would be if a trader is taking positions and then generating momentum through high-frequency trading that would benefit those positions. That could be manipulation, which would concern us. If there was momentum trading designed—or that actually exacerbated intra-day volatility, that might concern us because it could cause investors to get a worse price. And the other item I mentioned was if there were liquidity detection strategies that enabled high-frequency traders to front-run pension funds and mutual funds, that would also concern us.

Now, those are the things that we will look for as we do a deeper dive, Senator.

Senator CORKER. OK.

Mr. DRISCOLL. I think that it is important to mention also that what high-frequency traders do do is they keep the fees down for all the other investors. But the exchange fees are distributed across a number of trades, and as those trades go up, the fees become less for the other investors in the marketplace.

Senator CORKER. It seems to me that, aside from some of the things that can happen with any system that need to be regulated, high-frequency trading has made the cost of a transaction far less for the investing public. And so, you know, we hear it and it sounds like it is a bad thing. It looks to me like, generally speaking, there are lots of attributes that these market makers are bringing to the system.

It seems to me the other debate on—you know, let us move to dark pools for just 1 second. It seems to me that if I am hearing correctly, one base debate is whether a dark pool should disclose after the transaction occurs or when actually an order is made. Is that correct? Is that what I am hearing?

Mr. DRISCOLL. I think it is important to understand that those trades are reported to the tape immediately. It is just——

Senator CORKER. After the trade.

Mr. DRISCOLL. After the trade, but there is not any attribution to who actually traded it. The transparency we are talking about is attributing the trade to a specific dark pool.

Senator CORKER. And I guess I am having difficulty understanding if that is the case, the problem with—I mean, it seems to me very much like what existed on the New York Stock Exchange where you would call a specialist, they would make a trade for you. So they would not move the market too quickly, they would break it up. They would do it, and it seems like to me that is exactly what these dark pools are doing, except doing it electronically. Am I missing something?

Mr. SUSSMAN. No. I think that is a correct characterization, and the reason why, you know, we would oppose the SEC's proposal as currently stated or as I interpret it is that attributing it to the dark pool would then give the entire market the sense that, hey, in this particular dark pool where we know there are only certain market participants, there is activity——

Senator CORKER. Smart participants.

Mr. SUSSMAN. Yes. There is activity going on, and they would be able to use that information to trade ahead of the institutional traders that are in that dark pool. So that is the concern that we have.

Senator CORKER. Respond, SEC.

Mr. BRIGAGLIANO. Yes, well, Senator, the Commission's post-trade transparency initiative requires not that the individuals trading be identified, but that the dark trading venue be identified as an exchange would be identified. And where there were concerns about disclosing information that could hurt an institutional order, a large size order, the Commission did propose an exception. But, preliminarily, the Commission saw no reason not to display the smaller orders that other markets must display.

Dr. HATHEWAY. And an issue from my perspective is on the pretrade transparency, retail investor orders, at least the best one in possession of a broker, have to be displayed to the public so everyone is aware of those. Those orders become the benchmark under which the dark pools trade.

Dark pools individually provide a number of the benefits that have been mentioned here. Collectively, as the amount of dark pool volume increases, you lose the transparency into where people are willing to buy and sell. And I think the pretrade dimension of what the SEC has on the table is something that we should consider and adopt.

Senator CORKER. I know my time is up, but it would seem to me then that an institutional buyer would in that case, in your case, be better off going back to the one person making the trade. But it really seems like you would be setting things back hugely solely to benefit an electronic exchange like you have.

Mr. GASSER. Based on the data we collect, Senator, the institutional buyer and seller will always be best served by finding a natural institution on the other side. So in the example of a Fidelity 100,000-share print, rather than split that up into 300 shares and disseminate—into 300-share lots and disseminate it over 40 execution venues, if they can find Vanguard on the other side, within the framework of the exist bid-offer spread, that is a frictionless trade, right? So——

Senator CORKER. Let me say this. I am going to stay here and ask more questions. We can talk more about it. My time is up.

Senator BUNNING. Let me enter in there, because the best price is not going to exist.

Mr. O'BRIEN. I think it is about striking a healthy balance between the price discovery that exchanges provide——

Senator BUNNING. If I am going to try to trade 100,000 shares of IBM, and I am going to put it on somebody's trading block or some institution has a trading block, I will not get the best price

for that 100,000 shares if I am the seller unless I break it down and do it in many, many smaller trades.

Mr. GASSER. That is correct, Senator, unless there is an equilibrium price of——

Senator BUNNING. Well, how often——

Mr. GASSER. In our system, that happens every day. We trades tens of millions of shares between institutions in a dark manner.

Senator BUNNING. Well, we will bring the institutions in and ask them.

Mr. GASSER. What is that?

Senator BUNNING. I said we will bring the institutions and ask them.

Mr. GASSER. Absolutely. And I think what you would find is that they are very supportive of that mechanism.

Chairman REED. Thank you.

Senator SCHUMER. Thank you. And I think Senator Bunning's questions were on the money. And if the market is so fragmented, you never know that best price. That is the problem here. That is the fundamental problem that we are trying to create. But let me just say a few words and then ask some questions.

I want to thank Senator Kaufman and, of course, you, Mr. Chairman, and all the witnesses. Sorry I could not be here during your testimony. I have looked at it.

As you know, I have taken an active interest in many of the issues being discussed at today's hearing because I believe America's capital markets have been and should continue to be the leading markets in the world. For decades, why have they been the leading capital markets? They are the most efficient, the most transparent, the most fair, greatest integrity, and they have been the envy of the world. When other countries are setting up their capital markets, they look to us. And people think they are getting a fair deal here, that things are less likely to be manipulated here than anywhere else. We cannot lose that.

An important part of that success is due to regulation that has historically ensured that the little guy, while he might not have as much money or these days the most advanced computer systems, can be sure when he puts in an order, the price he gets is fundamentally fair. That is what we are worried about here.

And as I stated in my letter to the SEC last week, the proliferation of alternative trading venues has significantly altered the trading landscape. Many of these changes have been largely for the better.

The competition provided by alternative trading systems brought significant benefits to retail investors, and that has been discussed by many of our witnesses. But these benefits have come at a cost because our capital markets have become increasingly fragmented, and market surveillance has not kept pace, making it increasingly difficult, especially in light of the technological developments that facilitate large volumes trading at high speeds, to conduct adequate market surveillance across the markets. I am concerned that this will erode the confidence in the fundamental fairness of our markets.

And so I agree with Senator Corker. High-speed trading, nothing wrong with it. It is good. To stop it would be Luddite. But it can

produce certain problems in the market in terms of equality, that the little guy and the big guy have the same shake. And that is what we have to guard against.

So the way to do this is not to abolish high-speed trading. That would make no sense. The way to do it is to acknowledge it is here and it has benefits, but we have to guard against the liabilities that it brings.

So I propose to the SEC that market surveillance should be consolidated across all trading venues to eliminate the information gaps and coordination problems that make surveillance across all the markets virtually impossible today. It would deal with the problem that Senator Bunning correctly brought up.

So my first question is to Mr.—I think you were wise to call him "Mr. SEC." Mr. Brigagliano—see? OK? As I noted in my letter to Chairman Schapiro last week, I am concerned that our fragmented market system of surveillance makes it nearly impossible to monitor market manipulation, monitor trading ahead of customer orders, and other abuses at the same time that the fragmentation of our markets and technological advances make such abuses easier to carry out.

Now, I understand that the SEC is looking at options to increase the information available to regulators, but would the SEC consider requiring fully consolidated market surveillance across all markets?

Mr. BRIGAGLIANO. Senator Schumer, that has to be an important element of enhancing our ability to surveil because while there is an Intermarket Surveillance Group, while markets share technologies, while they share information, without some central focus something could be missed.

Senator SCHUMER. Right.

Mr. BRIGAGLIANO. So as we move forward in trying to develop a better audit trail and better surveillance, you know, that concept has to be part of it.

Senator SCHUMER. Good. I am glad to hear that. So you are moving in that direction, right?

Mr. BRIGAGLIANO. Chairman Schapiro has an inter-division task force working hard on those issues.

Senator SCHUMER. But you agree basically with the thrust, the SEC agrees with the thrust of my remarks.

Mr. GASSER. Senator, may I——

Senator SCHUMER. Wait, wait. Let him answer first. He has got the power.

Mr. BRIGAGLIANO. Senator, we are absolutely moving to consider that. We think there is benefit to centralized surveillance.

Senator SCHUMER. Great. Good. OK. My next question is for Dr. Hatheway. You say in your written testimony that, "Rapid detection and enforcement through real-time and post-trade surveillance are critical to fair and orderly markets." Would NASDAQ endorse consolidated market surveillance? And if you can answer yes or no, that would be just fine.

Dr. HATHEWAY. I will work the yes or no in there, Senator. Thank you. We engage in multiple industrywide initiatives for cooperative surveillance, including the Intermarket Surveillance Group and the Options Regulatory Surveillance Authority plan, the

joint activity you mentioned a moment ago to surveil for insider trading. We look forward to gaining experience from these joint plans and the options initiative, and we are moving ahead on consolidated regulation——

Senator SCHUMER. I did not quite——

Dr. HATHEWAY. So, yes.

Senator SCHUMER. Yes. Good. Thank you.

Mr. Nagy, what about you? From an investor's perspective—did I pronounce your name right, sir? I am sorry.

Mr. NAGY. Close.

Senator SCHUMER. Mr. Nagy, from an investor perspective, do you think consolidated surveillance would benefit your customers and improve confidence in the integrity of our markets?

Mr. NAGY. Senator Schumer, I think [inaudible].

Senator SCHUMER. Great. OK. Now, Mr. O'Brien of Direct Edge, one of the concerns I have raised about flash orders, that it might allow someone receiving a flashed order to detect a pattern and trade ahead of those orders on other markets. What is Direct Edge doing to make sure this doesn't happen? Isn't it true that you can only monitor what is happening on your own trading platform? You can answer those, and then finally, we didn't agree on flash orders, but do you agree, then, with my proposal for consolidated market surveillance across all markets? You can answer all three questions.

Mr. O'BRIEN. I will answer that question first, which is yes, because there is only so much one market center or exchange can do in surveilling marketwide trading activities——

Senator SCHUMER. This is great.

Mr. O'BRIEN. ——for the patterns and the practices.

Senator SCHUMER. Good.

Mr. O'BRIEN. I think any order type that—whether it is a flash, using flash order technology, or a limit order, basically exposes information to other people and other people may take action in response to that. That is the nature of markets. Everyone wants to keep their cards to themselves, but ultimately, you have to show information to other people in order to get a trade executed.

What we have tried to do to ameliorate those concerns within our own market is, one, make those order types optional. Make people choose to see them so that they see that the advantages of using them outweigh those risks.

Number two, the technical implementations we have done have allowed us to look at the activity of the individual receiving that information and trading on them within our market.

But third, and to go back to your, I think, underlying thrust of your questioning, we have tried to and would support better marketwide surveillance.

Senator SCHUMER. Good. Does anyone disagree with that, of the other—Mr. Gasser, Mr. Driscoll, and Mr. Sussman?

Mr. DRISCOLL. I would be concerned that if we went to a consolidated regulation regime, we would lose the nuances of the markets. You know, the NASDAQ marketplace is quite different than the New York Stock Exchange. So I would think that we would want to go on to harmonize regulation more than consolidate regulation

so that we could keep those nuances that add value in those marketplaces for us.

Senator SCHUMER. Why don't you—I don't quite understand. You can still have nuances in the market and have a consolidated market surveillance.

Mr. DRISCOLL. The regulators at the NASDAQ understand their marketplace to a much better degree than somebody from the New York Stock Exchange Regulation Department, is my point. So we would want to make sure that those people had the ability to continue working.

Senator SCHUMER. My time is up. Mr. Chairman, Mr. Gasser wanted to——

Mr. GASSER. Yes. Senator Schumer, in my response to the Chairman's question about the challenges that face the marketplace, surveillability was the number one issue, so we would be very supportive of consolidated surveillance.

Senator SCHUMER. Thank you, Mr. Chairman.

Chairman REED. Thank you very much, Senator Schumer.

Senator SCHUMER. Thank you for those excellent answers.

[Laughter.]

Chairman REED. I posed a question to roughly half the panel about the challenges that we face, stepping back a bit, with this new technology, given that many of these practices on a person-to-person basis existed for years. So you have had time to think about it, and if you could be as succinct as possible, starting with Mr. Mathisson.

Mr. MATHISSON. All right. Well, thank you. So you would ask for the three issues that the regulators should be looking at and the first one we believe they should be looking at is fair access for dark pools, which we have already spoken about today, but we believe that there is a significant problem, not so much—the SEC raised the issue that dark pools might want to shut out a type of investor because, as Mr. Brigagliano put it, they might want to only trade with institutional investors and keep out what he called predatory investors.

We believe that could be accomplished with objective standards. We think that they could shut out people based on order size, based on time people are willing to leave the orders in the system. They could shut out people based on disciplinary action history, to try to get out the guys who are perceived to be sleazy. But we think it can be done in an objective way, where you can set objective standards and say anyone who doesn't meet this—anyone who meets this criteria is allowed in. Anyone who does not is out. We don't think it should be capricious in that they should be able to shut out individual brokers that they perceive to be competitors.

The second issue would be the issue of what is called naked access, which is when certain broker-dealers allow traders to go straight to the market centers through their own technology and give up the broker's name. It is referred to as naked access. It means that there are no risk checks and it is not passing through the broker's system. We believe that that does raise issues of systemic risk.

And the third issue would be around proper transparency and surveillance, as was just being discussed. We believe that there

should be real-time transparency to the regulators. There should be real-time disclosure of a whole lot of things to the regulators, but not to the trading public because there are situations—information in the trading markets is not always a good thing and transparency is not always a good thing in real time in the trading markets because it does potentially allow traders to get ahead of longer-term investors. So while we believe there should be real-time disclosure of quite a few things to the regulators, things to the overall market can wait until the end of the day, end of the week, or end of the month.

Chairman REED. Thank you very much.

Mr. Nagy, please.

Mr. NAGY. Thank you, Chairman. The first issue, I would say, would be that of unintended consequences. In respect to that, the SEC, particularly the Division of Trading and Markets, has been very effective at creating a market structure that serves the retail investor. Moreover, we think the SEC is uniquely qualified to really have a deep understanding of micro market structure that we are talking about here today and to be able to see what some of those unintended consequences are through the public rulemaking process that they currently have today.

The second issue is really of investor integrity in our markets. With that being said, the Senate oversight responsibilities that you are conducting today, particularly of the SEC, are paramount to ensure that our markets continue to be fair for the individual investor. While today the markets do function in a very competitive and robust fashion, we need to ensure that the average Joe continues to get a fair shake in the marketplace.

Finally, one of the issues which has benefited the markets greatly over the years has been one of transparency. We need to continue to promote transparency, as transparency is really the key to driving long-term investment from the individual investor in our marketplace.

Chairman REED. Thank you very much.

Mr. O'Brien.

Mr. O'BRIEN. I think the first thing that is not often talked about in this debate is just greater investor education. I think we are all realizing, now more than ever, that we are stewards of investor confidence and the average American has a woefully antiquated understanding of how stocks are traded in this day and age. And so there are a variety of steps that I think need to be taken, and it is hard when the pace of change is so rapid in order to do that. Rational disclosures, greater education across the board. That allows investors, one, not to wake up one day and realize that they feel like their stock market is spinning out of control, and they can make informed choices about how to get their orders executed.

I think the second, and I won't reiterate on this, but just echoing Senator Schumer's concerns, regulators who are accountable need the tools, talent, tenacity, and information to be able to do their job in rapidly changing market conditions. And I think maybe the biggest challenge is just managing the—both important equally, but at times conflicting objectives of promoting efficiency and competition.

We had a system 10 years ago that was very centralized and in some ways very efficient, but it had its own problems—DOJ investigations, specialists leaving the floor in handcuffs, exchange executives having tens of millions of dollars of compensation. We don't have those problems anymore, or challenges, but we have new challenges and the line in this day and age, especially with technology, between a trader and a broker and a market and an exchange are increasingly blurred. And so how to manage that competition in a way that, over time, is producing a continually efficient market that investors have confidence in.

Chairman REED. Thank you very much, Mr. O'Brien.

Doctor.

Dr. HATHEWAY. Thank you very much, Mr. Chairman. The topics we have been talking about today—high-frequency trading, dark pools, flash orders—either originated with or were popularized by ATSs. I think one thing that is missing in the current regulatory structure is a thorough scrutiny by the SEC of the business model of new ATSs when they are launched and SEC review of new policies that ATSs intend to put in place as part of their business. This is not rulemaking at the level the exchanges are subject to. Instead, this is simply review by another set of eyes as to what the potential market impacts may be from innovative and competitive ideas should they become widely adopted in the industry, as was the case with flash orders.

The second point on disclosure of actionable IOIs, if that should be adopted in rulemaking, the SEC needs to remain vigilant as to whether that is sufficient to incur good pretrade transparency. Some of us on this panel will remember a time when you wanted to get a price in a stock, you had to make three phone calls. You don't want an environment where you need to ping three dark pools to find out what the price is, because in a computerized environment, an outbound message or an inbound message both can be done very, very quickly.

Finally, as Dan Mathisson said, sponsored access is something that needs thorough scrutiny. NASDAQ has a rule filing requiring pretrade risk management for the users of sponsored access. We would encourage that to become standard and other exchanges to file similar rules. Thank you.

Chairman REED. Thank you very much.

Now, Mr. Brigagliano, you have the floor to summarize.

Mr. BRIGAGLIANO. Thank you, Chairman Reed. Advances in the technologies and strategies in the market have resulted often in lower trading costs and better prices for investors, and they drive our economy and that is well and good.

At the same time, our job as regulators is to make sure that the core principles of the Exchange Act—best execution, fairness, nonmanipulated markets—are maintained. So as we look at high-frequency trading, direct market access, dark pools, colocation, flash orders, to pick up on Senator Schumer's point, it is not a question necessarily of saying one is good or bad, but it is addressing through rulemaking, auditing, and surveillance any threats to those core principles that could arise as the markets innovate and develop.

Chairman REED. Thank you very much.

One other point I think you would agree to is that the issue of adequate resources, what has impressed me is that I would suspect these gentlemen have sort of much more sophisticated software, hardware, every kind of ware, and sort of more Ph.D.s and *et cetera* than the SEC. There is a real issue here, a basic issue of just keeping up with the technology, by having the technology and the expertise. Is that an issue that you are working on at the SEC and ready to ask or tell us what you need?

Mr. BRIGAGLIANO. Yes, Chairman Reed. Particularly as we refine what we believe is necessary to make sure we adequately can monitor and analyze trading with the new technologies, we likely will need advanced in technology and additional individuals with the skill sets to make that technology most efficient for us.

Chairman REED. Thank you very much.

I have one additional question, so I will recognize Senator Bunning, Senator Corker, and then I will ask the question. If you want to stay and ask other questions——

Senator BUNNING. I will try to get mine in all this time, since I have got 5 minutes.

First of all, you all seem very happy about the way things are, or reasonably happy, but we have had some unbelievable messes. I mean, a $50 billion mess is a pretty big mess. Now, we somehow in regulations were not able to discover Bernie and his Ponzi scheme that he was doing, and he wasn't even doing it. It was all a hoax on the people. So somehow, the SEC has got to be able to have the power to regulate those kind of people that are dealing in securities or nonsecurities and just plain fraud. I just hope that you have the tools to do that with. Are you going to not answer, or are you going to answer me?

Mr. BRIGAGLIANO. Ranking Member Bunning, I would be happy to answer. I wanted to make sure that your question was completed.

Senator BUNNING. Oh, OK.

Mr. BRIGAGLIANO. We have identified the additional enhancements we think we need in terms of better audit trail, more information about large traders——

Senator BUNNING. Quicker information?

Mr. BRIGAGLIANO. Quicker information and also who is really behind the trade. Quicker access, really, is the way, you are right, to find out who the principals are, who their affiliates are, to sort that out more quickly when we need to find out, and we are working on developing that capacity. And then, of course, the additional technology to analyze this huge volume of high-speed trading.

Senator BUNNING. Mr. Driscoll, in your statement, you suggested that regulatory gaps between exchanges and alternative trading systems should be addressed. Do you have a specific suggestion about what should be done?

Mr. DRISCOLL. As these dark pools that are incubated under Reg ATS mature, we think that they should pick up one of the responsibilities that the exchanges have. Whether that entails sharing some of the regulatory burden, the costs, or starting to manage the——

Senator BUNNING. You are all making enough money to share the burden.

Mr. DRISCOLL. ——or sharing the—starting to regulate some of the members that are coming into their pools. We think that the way to really weed out the ones that aren't providing more value than the lit venues is to bring that regulation up and let them share some of the burdens, making the playing field more level for the exchanges and the ATSs.

Mr. O'BRIEN. Ranking Member Bunning, I would just add to that. There is an example of how that is working. So Direct Edge operates as a form of an ATS today, and we embraced that regulation when we were very small. We have now become a material part of the market and we are voluntarily in the process of applying to the SEC to register our markets as exchanges. We are actually, given our growth, seeking greater regulation and responsibility overall.

Mr. DRISCOLL. I think——

Senator BUNNING. Congratulations.

Mr. DRISCOLL. I think that that is exactly our point, is that we want to develop deeper and better players in the marketplace. So the incubation brings these more mature players and they come in and pick up some of the responsibilities that other markets are taking right now.

Senator BUNNING. Mr. Nagy, you seem to be concerned about the impact of dark pools and high-frequency trading practices on retail investors, especially on the accuracy of displayed prices. What do you think needs to be done to level the playing field for retail investors while keeping the benefits for institutional investors who are likely also representing the same retail investors through retail funds?

Mr. NAGY. Sir, the concerns I put forth in my discussions today represent our concern in terms of to what degree do you reach a tipping point in terms of reducing the transparency in the public marketplace for the benefit of dark trading. Today's retail client, when they decide to purchase or sell a security, the only real way they can be enabled to do that is by ascertaining a quotation which is only available in the public marketplace to decide what they are going to buy or sell.

As we see growth proliferation within dark pools, and I don't focus so much on volume percentages *per se*. I would rather focus on sheer numbers. It is estimated that there are over 40 dark pools today. At any one point in time, that could increase really exponentially because the process, the Regulation ATS process is a fairly simplistic process.

Senator BUNNING. I think that the information we have gotten is different from the information you just quoted.

Mr. NAGY. How so, sir?

Senator BUNNING. There are 29 dark pools that represent 7.2 percent of the market.

Mr. NAGY. Yes, that is—I have heard a lot of different numbers, actually.

Senator BUNNING. Well——

Mr. NAGY. We did a study last year where we found 42 different dark pools in the marketplace.

The real question, though, is to what degree does proliferation of dark pools provide real benefit, and one of the concerns or potential

unintended consequences of some of the dark pool regulation that the SEC is proposing by reducing the display percentage to 0.25 percent is do you then exponentially simply increase the number of dark pools in the marketplace and further fragment the market, and we don't see that being comprehensively addressed. Therefore, we believe that there should be some sort of rigorous standards to ensure that the process itself is robust, that process——

Senator BUNNING. You are eating up all my time, so thank you.

Mr. NAGY. Sorry, Senator.

Senator BUNNING. This is a toss-up. Are there any practices or market developments that we have not talked about today that benefit select firms or groups over individual investors that you think need to be addressed? That is a toss-up for anybody. Don't all of you——

Mr. SUSSMAN. If I could take the conversation away from the U.S. equity markets, I think that the retail investor does not have access to all of the products and instruments that institutional investors do have access to.

Senator BUNNING. Do they want them?

Mr. SUSSMAN. Well, we should ask them.

Senator BUNNING. Are they sophisticated enough to deal with them?

Mr. SUSSMAN. I think so, yes. I mean, I think that if you are willing to—if you have an understanding of the market—I mean, there are suitability requirements that brokers have——

Senator BUNNING. When I was in the business, we said if you want to do options and other things like that, go to the track. You have got a better shot.

Mr. SUSSMAN. Well, I mean, I think that if we are going to allow our pension funds and mutual funds to trade in these instruments and investors the same, why not give folks an equal opportunity to trade those instruments themselves, as well. In fact, when an individual investor takes on that responsibility, they can be sure of how their money is invested, right? When you put your money into a pooled fund, you actually are losing that connection with your investments, and I think that is part of the problem that we have today, is that people are so far removed from the investment practices that go on that when something like Bernie Madoff happens and everyone is surprised, it is no surprise that when you start to disassociate——

Senator BUNNING. Greed is no surprise. There is enough going around.

Mr. SUSSMAN. Right.

Senator BUNNING. So when someone specifically bilks $50 billion out of the market, it doesn't surprise anybody who sits up here. It may surprise some of you who are in the business, but I doubt it.

So my question was is there something that we are missing——

Mr. O'BRIEN. Ranking Member Bunning, I will make a point, and it has to do with market data. There has been a lot of focus on flash as potentially giving select market participants a millisecond advantage. I disagree with that for some reasons, but the broader point and something that is very well known on the street is that the consolidated quote, the national best bid, best offer, is very slow and totally noncomprehensive related to the proprietary data

feeds that some exchanges are selling to high-frequency traders and other customers and earning——

Senator BUNNING. Well, maybe that is a very key point that the SEC should be looking at.

Mr. O'BRIEN. Yes, and our market data infrastructure on a national basis hasn't been upgraded to reflect that reality.

Senator BUNNING. Thank you.

Mr. DRISCOLL. Senator, if I may, just one further point on that. I was concerned, too, about the slowness of the SIP quote and was discussing it last week with the representative of a major exchange who informed me that while that was a problem in the past, the SIP quote is now up to three milliseconds behind the direct data feeds from the exchanges. I don't know for a long-term investor if that is a significant amount, but they have made good strides in bringing that up to speed.

Senator BUNNING. Thank you.

Chairman REED. Senator Corker.

Senator CORKER. Mr. Chairman, thank you, and we have so many great witnesses today, I apologize for not being able to talk with each one of you. You all have been great witnesses.

But I want to get back to the dark pool issue just to sort of take one topic at a time, at least for me. Mr. Nagy, it seems to me that the dark pools are an outgrowth of electronic exchanges where people are trying to sell large bulks of shares in a way that used to be done by individuals. So if we are going to be almost all electronic exchanges, even the New York Stock Exchange—I am just wondering whether that is not the world they should have been in years ago—what is another mechanism for large institutional traders of large blocks of stock, what is a fairer way for them to be able to make those types of trades without moving the market substantially and really harming the very people they are investing for? What is a better mechanism than a dark pool?

Mr. NAGY. So, Senator, you bring up a very, very good point, and to clear my points, although I have concerns of where dark pools are going, the proliferation or the birth of dark pools, particularly after Rule 301 Reg ATS, has been very beneficial in turning that volume and bringing that volume into much more of an electronic format. If you do away with all dark pools, then do you simply drive that business in back, and I believe you stated this earlier, into its previous form, which was a sales trader sitting up at a shop taking paper order tickets down on the floor.

So I want to make sure that you understand that dark pools do have a place to minimize transparent market impact in today's marketplace. However, we must be cognizant and careful of the proliferation of them.

As we approach, as Ranking Member Bunning said, we have 29—I have counted more than that—to what degree and what measures do we put in place so that we don't have hundreds out there, or perhaps even thousands——

Senator CORKER. So your point is not that they are bad——

Mr. NAGY. Correct.

Senator CORKER. ——it is just that too many of them might be bad.

Mr. NAGY. That is correct.

Senator CORKER. And you are talking about numbers, not percentages of the market, is that correct?

Mr. NAGY. Yes, sir.

Senator CORKER. OK. So, Mr. Mathisson, you made the point, I think, that you shouldn't be able to exclude people, that everybody ought to have access to a dark pool. But it seems to me that if you do that, you kind of do away with the whole purpose of the dark pool in the first place, don't you?

Mr. MATHISSON. Well, the purpose of the dark pool is to be able to buy or sell without displaying bids and offers to the marketplace. It is not to avoid trading with any particular type of party. So, no, I don't think—I think the purpose of a dark pool is to replicate what in the old days was equivalent to a broker putting the order in his pocket and looking for the other side without actually displaying to the world that there is a new buyer or a new seller in the marketplace.

Senator CORKER. Mr. O'Brien, do you agree with that?

Mr. O'BRIEN. I think it is a combination. I mean, I think the focus is how to allow dark pools to each have their own kind of independent value proposition, but keep everyone connected as reasonably possible, right. So that is really the one reason why we use flash technology, in that while each dark pool wasn't necessarily letting everybody in, we created a network of 25 or so dark pools that people could access using flash technology and get an execution on our exchange at the same time. So it is about bringing everyone together in a way that works for everybody, both over the short term and the long term, and I think we can preserve that.

Senator CORKER. Yes, sir?

Mr. GASSER. Senator Corker, I would respectfully disagree with Dan. You know, just from ITG's and POSIT's perspective, the vast majority of our executed volume in our dark pool was institutional and we are very selective about the constituents from the perspective of there are a lot of broker-dealers and competitors that have competing business models, right, and some of them have principal trading objectives. They are operating as a fiduciary for another client, right, in some cases. So our focus is singularly on the client, singularly on the quality of execution, and it is not necessary about just building market share and building executed volume. So I think we need to maintain some sense of independence.

Taken to its logical extent is the upstairs market would, in effect—I mean, taking it to that extreme, the upstairs market would disappear. If I give Goldman Sachs access to POSIT, why shouldn't I have access to their HOOT [phonetic] and the communications that are going on between their sales traders and block traders? So there is a level of transparency here that I think could be counterproductive to the quality of execution.

Mr. DRISCOLL. I would agree with that. You know, as an institutional trade, I do not want my orders going into fuel somebody's proprietary trading engine. I want to protect my orders, and the way to do that is for me to know who is in those pools and be able to trade with the people that I want to trade with.

Senator CORKER. And just for what it is worth, it seems to me that is the most sensible place, and I realize there ought to be a lot of disclosure, and I understand that is what most people are

pursuing. Some people want it before the transaction occurs. Some people want it after. Again, it seems to me that after makes more sense because the whole purpose is to keep that order in your pocket until you know that you have been able to transact it without moving the market. So, anyway, it seems like a natural outgrowth of where our country and where the world markets have gone.

But back to NASDAQ, Dr. Hatheway, moving on now to flash trades, you all used to do that, and you stopped doing that. And you all have been on the leading edge of—you know, maybe you are the one that created all this mess in the first place because of your great electronic exchange and people have mimicked that. And I thank you for that, and I enjoyed visiting your facilities.

But you all did have flash trading, and you stopped, and I wonder if you might educate us as to why.

Dr. HATHEWAY. Certainly, Senator. Thank you for the question. Flash trading was a feature of the market that existed in the hands of our competitors. We undertook a detailed analysis of flash trading, its impact that we saw on the market. We also entered into discussions with the SEC. Before we launched it, we had reservations about what it would do to market quality. When we launched it and when the SEC decided they would undertake rulemaking in this area, we withdrew it. It never became a particularly material part of our business. It was, as I said a few moments ago, a feature that originated in other parts of the market, perhaps without sufficient review when it first arose, and it became something that was a missing part of our product suite. We were happy to do without it and happy to see it eliminated from all the markets.

Senator CORKER. May I ask one more question?

Chairman REED. Go ahead, Senator.

Senator CORKER. Again, I thank each of you. The issue of colocation, do you mind, since you all—obviously, I am sure people want to collocate near NASDAQ. From your perspective, what are the things that those who want to make sure that markets act in transparent and fair ways, what are the main issues that we ought to be concerned about as it relates to colocation?

Dr. HATHEWAY. With colocation you cannot stop people from striving for proximity, to be close to the exchange. We think colocation——

Senator CORKER. That has been while Wall Street existed in the first place, right?

Dr. HATHEWAY. Wall Street existed, Threadneedle Street, pick your street. They are all the same way. We think by bringing the proximity within the exchange into a regulatory environment where you have fair and nondiscriminatory access, it provides benefits to the industry and to the investing public. Small firms can gain access to the market, startups, firms that are not particularly close to the city of New York. So it brings competition.

The key thing for the Commission and for us is to be sure that we have sufficient access so people who want to collocate with us can, that it is provided fairly, and that the benefits of colocation are nondiscriminatory between those who want it and have it.

Senator CORKER. But colocation, are there any real issues right now that exist with colocation?

Dr. HATHEWAY. There are no issues that I am aware of. The firms that are in our data center tend to be happy with what they have, the resources that we make available to them. There is a space available if more people want to come into the data center. I cannot speak for other market centers that offer colocation.

Senator CORKER. And the benefit, just for novices like myself, of actually being in your data center to someone who is operating a dark pool or whatever, that benefit to them is?

Dr. HATHEWAY. The benefit to them is reaction time to changes in the market. It is obviously——

Senator CORKER. So it is the length of time that data takes to get from point A to point B and, therefore, being adjacent to it, it is literally that transmission that benefits that collocator. Is that correct?

Dr. HATHEWAY. That is the perception among the collocators. As an economist, I think if they were across the street, it would not make an appreciable difference. But I am not a technologist. But the technologists tell me that the speed of light does not make a difference. You get the signal. Then the time advantage becomes how fast you can process that information.

As an old floor trader, yes, that is what mattered more, not how quickly you could hear, how far across the pit you were, but how quickly you could think.

Senator CORKER. I could go on and on. Mr. Chairman, I thank you. I do want to say, Mr. Sussman, I did not ask you any questions, but I thought your presentation was outstanding and very easy to understand. I think all of you have helped us tremendously, and I thank you for having this hearing, Mr. Chairman.

Chairman REED. Thank you, Senator Corker.

I have got one final question, and that is, we have talked about high-frequency trading, and I think it has been characterized in many different ways. But I was somewhat startled a few months ago when I read an article reporting on the arrest of an employee of Goldman Sachs who had allegedly stolen code for their high-frequency trading programs, and the Federal attorney who was before the judge arguing for a very high bail or no bail at all said that he was informed that with this software, there is a danger that somebody knew how to use the program and used it to manipulate markets in unfair ways. So, you know, I think it is important now with this technique, is there a way to use it? I mean, I think the presumption underlying all your questions, is this being used in a scrupulous way, just like our presumption was in many cases that, you know, fellows like Bernie Madoff, *et cetera,* were living up to their obligations, *et cetera.* But we have to be prepared for a world in which one, two, or three people are not scrupulous about their responsibilities. Mr. Gasser.

Mr. GASSER. Yes, Chairman Reed. We talked about surveillability earlier on and the level of sophistication that is needed to understand, you know, what is a liquidity provision on the part of a high-frequency trader—in other words, providing liquidity to the market—and what is potential manipulation. We deploy, as I know other firms do, a tremendous amount of technology to recognize patterns in the marketplace, such that when we do

enter the lit market, we understand exactly how our orders are being interacted with.

And, you know, from our own experience, I can tell you that there are some frictional trades going on out there that clearly look as if they are testing the boundaries of liquidity provision *versus* market manipulation. And so I think that the technology we alluded to earlier—the software, the hardware, the intellectual capital needed to do that—I think for most firms that are operating in the U.S. marketplace today that have a significant institutional share, it is a requirement in terms of doing business. And certainly I think the SEC would benefit greatly from having the same capabilities, but there is clearly an issue at the extreme end. And I am sure it applies to nonregulated enterprises, folks that do not have a transparent regulatory environment to operate under. But that is our——

Chairman REED. Let me follow up with a basic question, which I probably should have asked initially. These high-frequency trading platforms can be located anywhere in the world. Is that correct?

Mr. GASSER. Absolutely.

Chairman REED. So you could have someplace beyond the reach of regulators——

Mr. GASSER. Right, and that is why sponsored access is an issue that is closely linked to this in terms of who are these folks, are they regulated, nonregulated, are they entering marketplaces without the proper compliance checks, the proper financial checks. Even from a completely innocent perspective, do folks have the ability to fat finger and move markets arbitrarily, you know, completely unintentionally?

I think the high-frequency trading issue certainly is deserving of focus, as is sponsored access. Those are highly correlated.

Chairman REED. Let me follow up. I know some other might have comments, but I will follow up with one more question, Mr. Gasser. That is, what happens when you suspect that the envelope has been pierced and that someone—you just simply protect your own trade or——

Mr. GASSER. Well, I think we are given quite a bit of discretion on the part of our institutional clients to participate and withdraw from the market as we see fit. So if we are in what we describe as "not held" in that situation, in other words, the sense of urgency that the institution has is reasonable relative to what is going on in the market and we have the ability or the authority or the discretion to pull out of the market, we will, and we will return——

Chairman REED. But there is no requirement, informal or formal, to report your suspicions to the SEC——

Mr. GASSER. You know, it is a hard thing from the perspective to determine, you know, exactly whether or not that is just, you know, a circumstantial issue or something that is clearly being—you know, one person. And it gets to that whole issue of surveillability and transparency.

Mr. SUSSMAN. Just a quick comment. I think this issue of determining liquidity provisioning *versus* market manipulation, you know, the issue with, well, there are 29 dark pools or there are 42 dark pools, I think that is all symptomatic of the fact that there is just a lack of standardized terminology across the industry, and

that the industry needs to come together and say, you know, here is how we are going to define what a dark pool is, here is what we are going to define as appropriate liquidity provisioning *versus* market manipulation. I mean, we cannot get much further in the process, we cannot have the regulators expect to monitor how many dark pools there are or if there is market manipulation going on unless everyone agrees about the terminology. And I just think that that has fallen behind the progress that we have made on other fronts.

Chairman REED. Very good. Mr. Driscoll.

Mr. DRISCOLL. Just three follow-ups. On the fat thumb type of an error, I think the exchanges with their harmonized "clearly erroneous" rules have taken a big step in preventing a lot of the risk that goes along with that.

As far as people trying to take advantage of my orders, I can see—I do not need technology to show me that. I can see it and react as I need to, and that is my job. That is what we are sitting on those desks to do.

Chairman REED. But, there is no formal or informal obligation to say, "I have suspicions," to anyone so that this—you self-correct.

Mr. DRISCOLL. I would not be able to get off the phone with the SEC. I am an institutional trader. My job is to be suspicious of the counter side of my trades.

Chairman REED. Well, OK. Anyone else? I do want Mr. Brigagliano to comment on behalf of the SEC.

Mr. BRIGAGLIANO. If I could get the microphone on, I will, Chairman Reed. I think that this line of discussion has highlighted two issues. One is the sponsored access issue, which Ranking Member Bunning asked what is of most concern, and there seems to be a pretty clear consensus that that should be front burner, and it is at the SEC.

The other issue that really you have raised is cyber security, and the Commission has technology people who work with the markets to make sure that there is cyber security. But we do hear about hacking incidents, sometimes from abroad, into financial institutions, and that is certainly a problem that the country needs to pay more attention to, and we are, and that is another ground where we may need to put more resources.

Chairman REED. Well, thank you very much. There may be additional questions by my colleagues, those that attended and those that may not have attended, and we would ask you to respond to them as quickly as possible.

We will keep the record open until this Friday if there are additional comments that you want to make or statements that anyone would like to make.

Thank you very much. This has been a very informative hearing on a topic that is important and is just beginning to be recognized here. It has been recognized, I think, in the regulatory community and the technology community and the trading community, but we are beginning to recognize it, so thank you for helping us understand this issue. The hearing is adjourned.

[Whereupon, at 11:52 a.m., the hearing was adjourned.]

[Prepared statements, responses to written questions, and additional material supplied for the record follow:]

PREPARED STATEMENT OF CHAIRMAN JACK REED

I want to start by welcoming my friend and colleague Senator Ted Kaufman, who has spent considerable time examining some of the cutting edge issues facing our increasingly high-tech capital markets. I also want to welcome the witnesses joining us on our second panel this morning.

As many families struggle to regain their footing, stay in their homes, and keep their jobs in the wake of a severe recession caused by reckless profit seeking on Wall Street, it is appropriate and timely to meet today to ask questions about the role of technology and our financial markets.

Today's hearing is a check-up on our equity markets, amid concerns that technological developments in recent years may be disadvantaging certain investors. Electronic trading has evolved dramatically over the last decade, and it is important that regulators keep up. For example, trading technology today is measured not in seconds or even milliseconds, but in microseconds, or one-millionth of a second. So even a sneak peek of a fraction of a second using what is called a flash order may give some market participants a significant advantage.

Our hearing will take a closer look at such "flash orders," along with other market structure issues such as "dark pools," which are private trading systems that do not display quotes publicly, and "high frequency trading," a lightning-fast computer-based trading technique.

According to the SEC, the overall proportion of displayed market segments—those that display quotations to the public—has remained steady over time at approximately 75 percent of the market. However, undisplayed liquidity has shifted from taking place on the floor of the exchanges or between investment banks, to what are currently known as dark pools, with the number of such pools increasing from approximately 10 in 2002 to approximately 29 in 2009. Dark pools today account for about 7.2 percent of the total share of stock volume.

Dark pools and other undisplayed forms of liquidity have been considered useful to investors moving large numbers of shares, since it allows them to trade large blocks of shares of stock without giving others information to buy or sell ahead of them. However, some critics of dark pools argue that this has created a two-tiered market, in which only some investors in dark pools but not the general public have information about the best available prices. The SEC has recently proposed changes in this area to bring greater transparency to these pools.

Flash orders and high-frequency trading have also raised concerns. Flash orders, which enable investors who have not publicly displayed quotes to see orders before other investors, have raised concerns about fairness in the markets, and the SEC has recently proposed to ban them.

High-frequency trading, a much more common technique used extensively throughout the markets, is the buying and selling of stocks at extremely fast speeds with the help of powerful computers. This activity has raised concerns that some market participants are able to "game" the system, using repeated and lightning-fast orders to quickly identify other traders' positions and take advantage of that information, potentially disadvantaging retail investors. Other investors argue that the practice has significantly increased liquidity in the markets, improved price discovery, and reduced spreads, and that high-frequency trading is being used by all types of investors.

Today's hearing will help to answer some important questions about these issues. Have recent developments helped or hurt the average investor? How have these developments impacted the average household's ability to save for college and retirement? What risks we must be vigilant about in how we structure and operate our markets going forward?

I have asked today's witnesses to discuss the potential benefits and drawbacks of "dark pools" and other undisplayed quotes now and historically in our markets. I have also asked them how flash orders and high-frequency trading have impacted the markets, and whether tools like this may disadvantage certain investors, especially retail investors.

Finally, as the SEC has recently taken steps to ban flash orders and increase transparency in dark pools, we will hear perspectives on the SEC's actions, and ask our panelists what additional legislative or regulatory changes, if any, are needed to protect retail investors and ensure fair markets.

PREPARED STATEMENT OF SENATOR JIM BUNNING

Thank you, Mr. Chairman.

I think this will be an educational hearing about several complex topics that have been in the news lately.

A lot of things have changed in the securities markets since I sat at a trading desk. While just about all trades take place over a computer now, trading used to be done over the phone or in person. There are many more stocks and other securities traded now, just as there are many more investors.

But even though the technology and the amount of money changing hands has changed, a lot is still the same. Investors are still looking for the best price and traders are still using every tool they can to get an edge. And there is always someone trying to make a quick buck off the unsophisticated and uninformed, or even through manipulation and fraud.

Historically, the way we have tried to make our markets safer and fairer is by increasing transparency and access, and I think that has worked. But in order for those principles to continue to work, the SEC must stay on top of the changing markets and update its rules as necessary. I am glad to see the Commission is reviewing its market structure rules, and I hope it does not limit those reviews to just the topics that have been covered in the news. I also hope the Commission will let this Committee know if there are any gaps in its authority that we need to fill so any market structure issues can be properly addressed.

Thank you, Mr. Chairman. I look forward to hearing from our witnesses.

PREPARED STATEMENT OF SENATOR EDWARD E. KAUFMAN

It's a privilege for me to testify at today's hearing, and I commend Chairman Reed and Ranking Member Bunning for convening it.

Mr. Chairman, our stock markets have evolved rapidly in the past few years in ways that raise important questions for this hearing to explore.

Technological developments have far outpaced regulatory oversight; and traders who buy and sell stocks in milliseconds—capitalizing everywhere on minute price differentials in a highly fragmented marketplace—now predominate over value investors. Liquidity as an end seems to have trumped the need for transparency and fairness. We risk creating a two-tiered market structure that is opaque, highly fragmented and unfair to long-term investors.

I am very concerned about the integrity of the U.S. capital markets, which are an essential component to the success of our Nation.

It was the repeal of the uptick rule by the SEC in 2007 which first caught my attention. When I was at Wharton getting my MBA in the mid-1960s, the uptick rule was considered a cornerstone of effective financial regulation. As many on this Subcommittee have noted, the uptick rule's repeal made it easier for bear raiders—no longer constrained to wait for an uptick in price between each short sale—to help bring down Lehman Brothers and Bear Stearns in their final days.

In April, Senators Isakson, Tester, Specter, Chambliss and I introduced a bill prodding the SEC to reinstate the rule. As the months have gone by, I have asked myself—why is it so difficult for the SEC to mandate some version of the uptick rule and impose "hard locate" requirements to stop naked short selling? Then it became clear: None of the high-frequency traders—who dominate the market—want to reprogram their computer algorithms to wait for an uptick in price or to obtain a "hard locate" of available underlying shares.

I began to hear from many on Wall Street and other experts concerned about a host of questionable practices—all connected to the decimalization and digitalization of the market and the resulting surge in electronic trading activity. It became clear that the SEC staff was considering issues piecemeal—like the rise of flash orders—without taking a holistic view of the market's overall structure, applying rules from a floor-based trading era to our current electronic trading venues.

I wrote SEC Chairman Schapiro on August 21 calling for a comprehensive "ground up" review of the equity markets (my letter and the Chairman's September 10 response are attached):

> Actions by the SEC over recent decades have, perhaps unintentionally, encouraged the development of markets which seem to favor the most technologically sophisticated traders. The current market structure appears to be the natural consequence of regulations designed to increase efficiency and thereby provide the greatest benefits to the highest volume traders. I believe the SEC's rules have effectively placed "increased liquidity" as a value above fair execution of trades for all investors.
>
> Markets have become so fragmented—and the rise of high-frequency trading that can execute trades in milliseconds has been so rapid—that the SEC should review and quantify the costs and benefits of these market structure developments to all investors.

The facts speak for themselves. We've gone from an era dominated by a duopoly of the New York Stock Exchange and NASDAQ to a highly fragmented market of more than 60 trading centers. Dark pools, which allow confidential trading away from the public eye, have flourished, growing from 1.5 percent to 12 percent of market trades in under 5 years.

Competition for liquidity is intense—and increasingly problematic. Flash orders, liquidity rebates, direct access granted to hedge funds by the exchanges, dark pools, indications of interest, and payment for order flow are each a consequence of these 60 centers all competing for liquidity.

Moreover, in just a few short years, high frequency trading—which feeds everywhere on miniscule price differences between and among the many fragmented trading venues—has skyrocketed from 30 percent to 70 percent of the daily volume. Indeed, the chief executive of one of the country's biggest block traders in dark pools was quoted last week as saying that the amount of money devoted to high frequency trading could quintuple "between this year and next."

So I'm pleased that the Commission has begun to address flash orders and dark pools.

Let me quickly layout three reasons why this hearing is so important:

First, we must avoid systemic risk to the markets. Our recent history teaches us that when markets develop too rapidly, when they are not transparent, effectively regulated or fair—a breakdown can trigger a disaster.

Second, rapid advances in technology, which can produce impressive results, combined with market fragmentation are moving us from an investor's market to a trader's market. This can have significant consequences. Last week, I met with the author of a soon-to-be released Grant Thornton study that found that market structure changes since the 1990s have severely undermined the ability of small companies to raise capital and issue IPOs.

Third, we must ensure that retail investors are not relegated to second-tier status. When the average investor believes he or she is paying a higher price for 100 shares of IBM, even if only marginally, the integrity of our markets is significantly tarnished. The markets should work best for those who want to buy and hold in hopes of a golden retirement, not just for high frequency traders who want to buy and sell in fractions of a second.

As Chairman Schapiro acknowledged just yesterday, "I believe we need a deeper understanding of the strategies and activities of high frequency traders and the potential impact on our markets and investors of so many transactions occurring so quickly."

Many on Wall Street assure us we have nothing to worry about: that high-speed technology has only led to positive changes: greater liquidity, narrowed spreads and lower costs. Rules ensuring "best execution," they say, will always protect the investor. Don't take those claims on face value.

- *Many of these "liquidity providers" are not regulated market makers.* Furthermore, liquidity mainly follows high-volume stocks because that's where the profit is; in low volume stocks, spreads remain wide.
- *Our regulators and broker-dealers are using antiquated benchmarks and measurements to ensure fair trades.* By the time the consolidated best bid and offer data has been aggregated from the many different market centers and then disseminated, the time lag is large enough for an entire industry of high frequency traders to book millions of dollars in profits.
- *Payment for order flow is an inherent conflict of interest.* Because it encourages broker dealers to send retail order flow to the highest bidder and not to the trading center that is necessarily best for the buyer or seller, payment for retail order flow is a highly dubious practice.
- *Growing trading volumes in dark pools is undermining public price discovery.* While certain dark pools serve a useful function—permitting large blocks of stock to change hands without creating temporary price drops or gains—their proliferation is undermining public prices.
- *High-frequency gaming strategies may be forcing retail investors to pay higher prices, although the lack of transparency and effective regulatory surveillance prevents us from knowing the extent to which this might be happening.* But it is telling when sophisticated clients are reportedly demanding that their major broker-dealers "not hand over their orders on a silver platter"—and when seminars for institutional fund managers are conducted openly on how to avoid being "gamed" in dark pools.

Technology should not dictate our regulatory destiny; rather our regulatory policy should provide the framework and the guidelines under which technology operates.

Our foremost policy goal should be to restore the markets to their highest and best purposes: serving the interests of long-term investors, establishing prices that allocate resources to their most productive uses, and enabling companies—large and small—to raise capital to innovate, create jobs and grow.

The SEC's ground–up review of these issues should leave nothing out, reviving old ideas and examining new ones: should markets be centralized or decentralized; should we separate the markets based on investor types; what should be the role of market makers; what role might there be for real time risk management?

At a minimum, a few straightforward propositions should guide us to a regulatory framework that permits vigorous competition while substantially reducing the possibility of a two-tiered trading network, one where long-term investors are vulnerable to powerful trading companies that exist not to value or invest in the underlying companies, but to feed everywhere on small but statistically significant price differentials. As values, transparency and fairness should trump liquidity.

First, we should reconsider the criteria for becoming an exchange or market center. The market's unhealthy fragmentation, and the high-speed trading strategies which thrive on its fractured state, are growing far too rapidly to ensure that there are not unintended negative consequences for the investing public.

Second, we should consider rule changes that ensure the best prices are publicly available, not hidden from view in private trades. The strength of a free market is based on this public display. We should reduce "internalization" by broker-dealers, by insisting on meaningful price improvement in comparison to the public quotes or by granting the public quotes the right to trade first. And we should reduce trading in dark pools by reducing the permissible threshold for dark pool trading and by defining indications of interest, and other quote-like trading signals, as quotes.

Third, we should root out conflicts of interest by ending payments from market centers that encourage orders to flow their way. The search for best execution by broker-dealers should not be subject to temptation from the highest bidders. Liquidity rebates and direct access to the exchanges by hedge funds, which are still unregulated entities, also deserve careful review.

Fourth, regulators should measure execution fairness in milliseconds for stock trades of all kinds, as only then can the credibility of the markets be assured. The audit trails and records of order execution in fragmented venues must be synchronized to the millisecond and made readily available in statistically understandable formats to regulators and the public. This obligation must be placed on broker-dealers as well as market centers. Currently, while high frequency traders bank profits in milliseconds, the first column for time on the Rule 605 form, used by regulators to measure execution quality, reads "0-9 seconds."

Fifth, regulators must develop more sophisticated statistical tests to gain a granular view of gaming strategies, such as following high frequency trading volume patterns. Only then can regulators separate high frequency strategies that add value to the marketplace from those that inexcusably take value away.

As a Nation, our credit and equity markets should be a crown jewel. Only a year ago, we suffered a credit market debacle that led to devastating consequences for millions of Americans. While we must redress those problems, we must also urgently examine opaque and complex financial practices in other markets, including equities, before new problems arise. It is essential to ensure the integrity of U.S. capital markets.

EDWARD E. KAUFMAN
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United States Senate

JUDICIARY COMMITTEE
MEMBER

FOREIGN RELATIONS COMMITTEE
MEMBER

August 21, 2009

The Honorable Mary L. Schapiro
Chairman
U.S. Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-1090

Re: Comprehensive Review of Market Structure Issues

Dear Chairman Schapiro:

I am writing to you concerning the present SEC review of questionable market structure issues that have developed in recent years, such as so-called "flash orders" (selectively displayed orders) and dark liquidity pools. I request that the SEC undertake a comprehensive, independent "zero-based regulatory review" of a broad range of market structure issues, analyzing the current market structure from the ground up before piecemeal changes built on the current structure increase the potential for execution unfairness. I am concerned that questionable practices threaten to further erode investor confidence in our financial markets and that our understanding and regulatory capacity have not kept pace with those changes.

Actions by the SEC over recent decades have, perhaps unintentionally, encouraged the development of markets which seem to favor the most technologically sophisticated traders. The current market structure appears to be the consequence of regulatory structures designed to increase efficiency and thereby provide the greatest benefits to the highest volume traders. The implications of the current system for buy-and-hold investors have not been the subject of a thorough analysis. I believe the SEC's rules have effectively placed "increased liquidity" as a value above fair execution of trades for all investors.

Markets have become so fragmented – and the rise of high-frequency trading that can execute trades in milliseconds has been so rapid – that the SEC should review and quantify the costs and benefits of these market structure developments to all investors. Regulation NMS (or Reg NMS – or Regulation National Market System) appears to have had many unintended consequences, driving order flow into dark pools when it was intended to strengthen public order display. Regulation ATS (or Reg ATS – or Regulation Alternative Trading Systems) has permitted execution venues to flourish, and competition generally has been beneficial. More than 50 execution platforms now exist. This has led to increased competition for market share, however, that now includes questionable practices such as liquidity rebates, flash order offerings, co-location of

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servers and other inducement arrangements with broker-dealers and other market participants.

Moreover, market structure developments have taken place so quickly, that the SEC rule-making process is applying principles and precedents based on floor-based trading to electronic environments. For example, in May 2009, the SEC staff permitted two exchanges to introduce flash-order offerings, even though both admitted that the practice was of dubious value and that they simply were being driven to adopt it by the loss of market share to competitors. Instead of simply applying precedent from an obsolete business practice to a particular electronic order type or technological development, we need a comprehensive evaluation of each proposal's direct and indirect costs to the average investor.

In short, the SEC and the public it serves needs to step back and gain a clearer picture of what has happened. We need a thorough review of market structure issues so that our laws and regulations can keep pace with market developments. In particular, the SEC must look quickly into the following:

(1) Are **conflicts of interest** leading to failures to protect retail investor orders from execution strategies that take advantage of such investors because of the latent disparities within the market? Such disparities lead to opportunities to take advantage of market structure. Permitting a high-frequency trader to see information in "tomorrow's newspaper" does not benefit retail investors who are still reading today's newspaper (and who have been told repeatedly that a buy-and-hold strategy is best);

(2) Are the over 50 execution venues being **monitored and audited for best execution versus national best bid and offer**? The SEC needs to improve the reporting of execution quality for all trading venues in Rule 605. The SEC should also make brokerage firms produce better and usable execution quality statistics in Rule 606.

(3) Are the national best bid and offer (NBBO) **truly reflecting the quotes consolidated from the various venues at current execution speeds**? Otherwise, NBBO is questionable as a benchmark measure of execution fairness.

Market fragmentation and high-speed electronic trading have produced benefits, including increased liquidity, narrowed spreads, and lowered commissions for most investors. Yet the increase in liquidity and decrease in spreads has been centered around the most active stocks – liquidity is still light and spreads are still wide on many lower volume stocks (reminding us that providers of liquidity follow the profits in that activity; they do not provide liquidity across all stocks as a service to the market or as a public good).

Liquidity, speed and the role of arbitrage functions cannot be the end of the discussion. Indeed, this conversation is only now beginning to take place, as recent questionable market practices, which few previously understood, are only now coming to light.

For the markets to have credibility and investors to have confidence, the SEC must act urgently to restore a level playing field for investors. "Fair markets" is admittedly an elusive and evolving concept but one that needs to be clearly defined by the regulators. In the attached paper, I have elaborated on the topics and questions raised by current market structure developments. I encourage you to direct SEC staff to undertake a comprehensive study of these and other issues. This study should include independent outside experts from across the United States, including representatives of the retail investor community and small business.

Sincerely,

Edward E. Kaufman

cc: The Honorable Luis A. Aguilar, Securities and Exchange Commission
The Honorable Kathleen L. Casey, Securities and Exchange Commission
The Honorable Troy A. Paredes, Securities and Exchange Commission
The Honorable Elisse B. Walter, Securities and Exchange Commission

MARKET STRUCTURE ISSUES

Selectively Displayed Orders (So-Called "Flash Orders")

- DirectEdge is gaining market share through a flash order offering that allows it to invert its fee schedule.

- Nasdaq's and BATS's decisions first to offer and then to eliminate flash order offerings – without waiting on the SEC to ban flash orders – are commendable, though a telling illustration of the regulatory problems.

- Privileged information for select market participants creates information asymmetry. Whether it is advanced knowledge of research or block orders, the result for smaller investors is unfairness.

- The SEC should move to ban selectively displayed orders and indications of interest that are the functional equivalent of orders.

High-Frequency Trading (HFT)

- High Frequency Trading is estimated by the Tabb Group to represent 61% of share volume.

- The markets are so fragmented and speeds vary so much that potential for abuse needs to be subjected to a searching examination.

- Issues:

    - Regulators need deeper understanding of how these proprietary HFT algorithms use speed and cancelable orders to gain a more granular view of order flow.

    - Opportunities for abuse that exploit the market structure should be subjected to a searching examination and review and possibly prohibited. For example, in the late 1990s, the SEC regulated "SOES bandits," groups that were making easy profits from exploiting lags of a few seconds between exchanges in the US. In 2003, we learned that sophisticated investors were actively trading international mutual funds to take advantage of a time zone differential.

    - Can HFT's trace investor order flow and gain asymmetric information advantages without committing any capital and then use this information to execute ahead of orders in a risk-free manner?

- If it has not already done so, the SEC should investigate the claims made by two ex-employees from Renaissance Technologies, who according to press accounts said they were instructed to create trading strategies "to defraud investors trading through the Portfolio System for Institutional Trading, or POSIT."

- When trades are executed in milliseconds, why do we permit a 90-second delay in reporting trades to the tape (and how does this affect the average investor's ability to evaluate the quality of execution or the broker to monitor it in various execution venues)?

- How much of this high speed trading is done indirectly for investors through pension and mutual funds or ETFs? Or is it done mostly by hedge funds for their partners? Which mutual funds if any specialize in this trading?

- Do our high frequency markets need high frequency safeguards against major machine malfunctions?

Co-location of Servers at the Exchanges and other Execution Venues

- The SEC needs to ensure "fair access" by pro-actively determining a "method of allocation" of co-located capacity.

- The commission must also insure that such closeness is consistent with its plans for protection against terrorist attacks in the various business continuity directives.

- Fees for co-locating servers should be approved by the SEC.

- Agreements should offer the same terms and conditions and be transparent to regulators.

- Retail investors should have adequate choice of co-located execution by wholesalers.

Direct Market or Sponsored Access

- How much trading volume is now occurring directly (circumventing broker-dealers) between liquidity providers and execution venues?

- How does the SEC ensure adequate surveillance of these trade volumes?

Dark Pools

- There are now over 50 execution venues, many of which are dark pools. Dark pools go against the spirit of Reg NMS Rule 610, which requires fair and non-discriminatory access to quotations.
    - The growing volume of trades executed in dark pool is undermining public price discovery.
    - Order Audit Trail System (OATS) reporting should be expanded to NYSE-listed stocks and to all market centers so that regulators can better track what is happening with order execution.
    - Better understanding of the dark pools is necessary to determine the impact of dark pools on retail investors.
    - Do certain dark pools send out indications of interest to gain illumination of order flow granularity and in effect enable trades ahead of the orders?
    - Indeed we need audits of execution in dark pools and other execution venues to ensure prices at national-best-bid-or-offer.
    - Registrations of dark pools at the SEC should be transparent to the public.
    - What self-policing systems do dark pools employ concerning anti-gaming logic and rules and do these raise conflict of interest questions?

Liquidity Rebates

- The use of liquidity rebates (payment for order flow) to attract market share should be reconsidered. The London Stock Exchange has decided to end liquidity rebates by replacing them with a flat fee beginning September 1. Unfortunately, in an effort to take LSE market share, BATS will offer inverted pricing and a free liquidity removal incentive for UK stocks beginning on the 1st of September.
- If risk-free trading strategies exist that are driven solely by the ability to recoup a rebate, then what is the utility to the markets of such liquidity?

Retail Order Flow

- What are the financial inducements for directing retail order flow and are we confident they don't create conflicts of interest? For example, wholesalers get paid by the institution or HFT trader for execution against retail order flow. Does

that create a conflict of interest? Are the retail order flows being led to an HFT execution advantage, even if it's only a penny here and there?

- Disclosure of order flow payments under Rule 607 should require disclosure of the percentage of the payment that reverts to the customer.

- How many best execution cases have been brought in the last 10 years by either the SEC or FINRA?

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

THE CHAIRMAN

September 10, 2009

The Honorable Edward E. Kaufman
United States Senate
383 Russell Senate Office Building
Washington, DC 20510

Dear Senator Kaufman:

Thank you for your letter dated August 21, 2009, detailing your concerns about the current state of the structure of the U.S. securities markets. I appreciate your concerns and agree that the Commission must keep a careful watch on rapid advancements in trading technology to ensure that sophisticated traders are not favored and that regulation of the markets keeps pace with developments. We must maintain and promote the fairness and efficiency of the U.S. securities markets for all investors.

The interests of long-term investors and professional short-term traders in fair and efficient markets often will coincide. Indeed, vigorous competition among professional short-term traders can itself lead to very important benefits for long-term investors, including narrower spreads and greater depth. If, however, the interests of long-term investors and professional short-term traders conflict, the Commission previously has emphasized that "its clear responsibility is to uphold the interests of long-term investors." I firmly agree that the Commission's focus must be on the protection of long-term investors.

The recent economic crisis has put tremendous stress on the U.S. securities markets. Trading volume and volatility have reached record highs. In the face of the sharp spikes in volume and volatility, however, investors have been able to benefit from markets for U.S.-listed securities that have continued to operate in an efficient and orderly mannér.

The conditions that shape a market's performance, though, are continually changing. Competitive forces drive entrepreneurial industry participants to innovate with new technologies, new products, and new trading tools. The Commission is charged with monitoring these changes in the securities markets and updating its regulatory structure when needed. To this end, earlier this year I asked the Commission staff to conduct an overall examination of dark pools. This included a review of flash orders by exchanges and electronic trading systems and the Commission will soon be considering a recommendation by Commission staff on a proposal that would prohibit the practice of displaying marketable flash orders. Commission staff is also reviewing other market structure issues, including Regulation ATS thresholds, direct market access, high frequency trading, and co-location. I would expect that any rule proposal the Commission may promulgate regarding these issues would solicit comments from outside experts, investors and small businesses on these issues. We would, of course, study all comments very seriously.

Thank you again for sharing your concerns with the Commission. Please call me at (202) 551-2100, or have your staff call Julie Davis in the Office of Legislative and Intergovernmental Affairs at (202) 551-2010, if you have any questions or comments.

Sincerely,

Mary L. Schapiro
Chairman

PREPARED STATEMENT OF JAMES BRIGAGLIANO

COACTING DIRECTOR, DIVISION OF TRADING AND MARKETS, SECURITIES AND EXCHANGE COMMISSION

OCTOBER 28, 2009

Thank you Chairman Reed and Members of the Subcommittee for giving me the opportunity to speak to you today about the U.S. equity markets on behalf of the Securities and Exchange Commission ("SEC" or "Commission").

The U.S. equity markets have undergone a transformation in recent years due in large part to technological innovations that have changed the way that markets operate. As markets evolve, the Commission must continually seek to preserve the essential role of the public markets in promoting efficient price discovery, fair competition, and investor protection and confidence.

For this reason, the Commission is undertaking a broad review of equity market structure to assess its performance in recent years and determine whether market structure rules have kept pace with, among other things, changes in trading technology and practices. This review will address the advantages and disadvantages of matters including high frequency trading, sponsored access, and dark forms of liquidity. In fact, the Commission has already proposed rules related to banning flash orders and three issues designed to shed greater light on dark pools. Before I discuss these efforts in greater detail, however, let me provide some important background.

Background: Operation of U.S. Equity Markets

The United States has a highly competitive market with a large number of participants, including exchanges, electronic communications networks or "ECNs," alternative trading systems or "ATSs," over-the-counter (OTC) market makers, and proprietary trading firms. Currently, ten registered exchanges trade equity securities. An exchange brings together the orders of multiple buyers and sellers and is required to provide the best bid and offer prices for each stock that it trades, as well as last-sale information for each trade that takes place on that exchange. This information is collected and made public through consolidated systems that are approved and overseen by the SEC. Any investor in the United States can see the best quotation and the last-sale price of any listed stock, in real time. This transparency is a key element of the national market system mandated by Congress.

Under that system, the SEC seeks to promote competition among trading venues, since this can lead to benefits for institutional and retail investors, including lower transaction costs, improved liquidity and execution, enhanced price discovery, and more choices for investors. The SEC also seeks to ensure there is proper coordination among all trading centers, and is mindful of any potentially harmful effects of having orders placed in different markets rather than a single, central market.

Competition among markets has increased dramatically, especially in recent years. Thirty-four years ago, when Congress charged the SEC with creating an integrated national market system, the New York Stock Exchange (NYSE) accounted for the vast majority of trading volume in listed stocks and NASDAQ was becoming a major market for OTC stocks. NYSE and NASDAQ still play a significant role, but other markets, including ECNs and ATSs that didn't exist a decade ago, are now major participants in the national market system.

As a preliminary matter, let me describe ATSs and their origin, since certain types of ATSs figure prominently in market structure issues that I will discuss in a moment. ATSs are broker-dealers that match the orders of multiple buyers and sellers according to established, nondiscretionary methods. Although these types of systems have existed since the late 1960s, they began to proliferate in the mid 1990s in response to technological developments that made it easier for broker-dealers to match buy and sell orders. In 1998, the SEC created a new regulatory framework, called Regulation ATS, which sought to reduce barriers to entry for these systems and promote competition and innovation, while appropriately regulating the exchange functions that they performed.

Currently, there are 73 active, registered ATSs, and they trade all types of securities. Four of these ATSs have chosen to publicly display their best orders in the consolidated quote stream as exchanges do and to allow their quotes to be accessed (at least indirectly) by any investor. This subgroup of ATSs is known as ECNs. Over the last 15 years, ECNs have driven many beneficial changes in the equity marketplace, such as faster trading technologies, new pricing strategies, and robust intermarket linkages. Some ECNs have merged with registered exchanges or have registered as exchanges themselves. For example, BATS, the newest registered exchange, was until recently an ECN. Direct Edge, which is currently an ECN, is applying to become a registered exchange. Not only have ECNs, as well as other ATSs,

acquired significant market share, the competition they have brought to the markets has caused incumbent exchanges to adapt and compete to provide better services to investors.

Another type of ATS is the so-called "dark pool." An ATS that operates as a dark pool does not provide quotes into the public quote stream. The number of active dark pools transacting in stocks that trade on major U.S. stock markets has increased from approximately 10 in 2002 to approximately 30 in 2009. For the second quarter of 2009, the combined trading volume of dark pools was approximately 7.2 percent of the total share volume in these stocks, with no individual dark pool executing more than 1.3 percent. Like ECNs, dark pools operating under Regulation ATS must register as broker-dealers and become members of FINRA. The Commission has recently been reviewing the regulatory structure applicable to dark pools.

Although the phrase "dark pool" is new, the concept is old. Dark liquidity—meaning orders and latent demand that are not publicly displayed—has been present in some form within the equity markets for many years. Traders are loath to display the full extent of their trading interest. Imagine a large pension fund that wants to sell a million shares of a particular stock. If it displayed such an order, the price of the stock would likely drop sharply before the pension fund could sell its shares. So the pension fund, assuming it could execute its trade at all, would be forced to sell at a worse price than it might have if information about its order had remained confidential.

In the not-so-distant past, the pension fund might have placed the order, or some part of it, with a broker-dealer, which would attempt to find contraside interest (whether on the floor of an exchange or by calling around to other traders), preferably without giving up enough information to move the market against its client. Information leakage about a larger order was a serious problem, and the "market impact" of large orders would impose a major cost on investors.

Historically, many dark pools developed as computerized ways of searching for contraside trading interest while preserving confidentiality. While early dark pools were designed to cross large orders, and such pools still exist today, most of the newer dark pools are designed to trade smaller-sized orders. In some cases, these small orders are derived from large "parent" orders that have been chopped up into smaller pieces. In addition, some small orders represent orders that the broker-dealer operating the ATS is attempting to cross internally, rather than lose the execution to another market.

Looking at overall U.S. equity market structure, competition among different markets appears to have yielded significant benefits to investors, both retail and institutional: lower commissions, tighter spreads, faster execution speeds, and greater systems capacity. And from a systemic risk standpoint, having a network of interlinked markets is preferable to having a single point of failure. When trading is disrupted in one market, which happens occasionally, volume quickly migrates to other markets.

Our equity markets have faced serious tests since the onset of the financial crisis, and generally the markets have performed well. Despite record volumes and volatility, particularly in the fall of 2008, the markets for U.S.-listed securities have remained open and continued to operate in a fair and orderly manner and to perform their vital price discovery function. Buyers and sellers could see current prices and expect to execute their trades promptly at the prices they saw on their screens.

But markets continually evolve, and among the questions that have been raised about recent changes in the market are questions about whether certain current market practices might create a two-tiered market. The Commission's job is to make sure that the core principles of the Exchange Act—fairness, efficiency, and best execution—are maintained as the markets, and the environment in which they operate, change. So the challenge for regulators is to monitor these changes and update regulation when needed. The Commission currently is taking a broad and critical look at market structure practices in light of the rapid development in trading technology and strategies. I will address some steps the Commission has taken recently, and some that I anticipate it may take in the near future.

Commission Action on Market Structure Reforms

Flash Orders

In September, the SEC proposed to prohibit the practice of flashing marketable orders. In general, flash orders are communicated to certain market participants and either executed immediately or withdrawn immediately after communication. Flash orders are exempt from the Exchange Act's quoting requirements as the result of an exemption formulated when most trading took place on the floors of the exchanges. The exception was originally intended to facilitate manual trading in the

crowd on exchange floors by excluding quotations that were then considered "ephemeral" and impractical to include in the consolidated quotation data.

The Commission is concerned that the exception for flash orders, whether manual or automated, from Exchange Act quoting requirements is no longer necessary or appropriate in today's highly automated trading environment. The consolidated quotation stream is designed to provide investors with a source of information for the best prices in a listed security, rather than forcing investors to obtain such information by subscribing to all of the data feeds of the many exchanges and ATSs that trade listed securities. The flashing of order information could lead to a two-tiered market in which the public does not have access, through the consolidated quotation data streams, to information about the best available prices for U.S.-listed securities that is available to some market participants through proprietary data feeds.

In addition, the recipients of the flashed order can trade at the same price as the displayed quote without publicly quoting themselves. At the same time, the investor who is publicly quoting may miss out on the opportunity to receive an execution. The recipients of the flashed order also may obtain an informational advantage by seeing and being able to react to orders in the market before others can. As a result, flash orders could lead to a two-tiered market where the public does not have equal access to information about the best available prices for listed securities.

Flash orders also offer potential benefits to certain types of market participants. For example, for those seeking liquidity, the flash mechanism may attract additional liquidity from market participants who are not otherwise willing to display their trading interest publicly, and could help lower the transaction costs of those responding to flash orders. Flash orders may be executed through the flash process for lower fees than those charged by many markets for accessing displayed quotations.

Taking these factors into consideration, the Commission recently proposed to ban flash orders, noting that while flash orders may potentially be providing benefits to certain traders, it may no longer serve the interests of long-term investors or the markets as a whole. The Commission has stated, both in adopting Regulation NMS and in proposing to ban flash orders, that the interests of long-term investors should be upheld as against those of professional short-term traders, when those interests are in conflict. The comment period on the proposal to ban flash orders remains open until November 23, and the staff and the Commission look forward to carefully analyzing the comments received.

Dark Pools

Last week, the SEC made additional proposals related to market structure. These proposals relate to three issues relevant to dark pools and so-called actionable "indications of interest" or "IOIs." IOIs, like flash orders, potentially create two-tiered markets in which selected participants are made aware of prices that are available in the market but that other investors don't know about. IOIs are used by some market makers and dark pools to alert certain other market participants about available trading opportunities. Some of these IOIs are actionable IOIs: they contain enough information for a recipient to act on them in the same way it would act on quotes.

Therefore, the Commission has put forth three proposals in this area. The first proposal would require actionable IOIs to be treated like quotations and be subject to the same disclosure rules that apply to quotations. The second proposal would lower the ATS trading volume threshold for displaying best-priced orders in the consolidated quote stream. Currently, an ATS, if it displays orders to more than one person, must display its best-priced orders to the public when its trading volume for a stock is 5 percent or more. This proposal would lower that percentage to 0.25 percent, meaning that dark pools that use actionable IOIs and exceed the volume percentage threshold would be required to publicly display those actionable IOIs as quotes. Taken together these changes would help make the information conveyed by actionable IOIs available to the public instead of just to a select group.

At the same time, both proposals would exclude from their requirements certain narrowly targeted IOIs related to large orders. These size discovery mechanisms currently are offered by dark pools that specialize in large trades. In particular, the proposal would exclude IOIs for $200,000 or more that are communicated only to those who are reasonably believed to represent current contra-side trading interest of equally large size. The ability to have a method for connecting investors desiring to trade shares in large blocks could enable those investors to trade efficiently in sizes much larger than the average size of trades in the public markets.

As you know, Chairman Schapiro has expressed concern about transparency in dark pools generally. I mentioned earlier that all trades, even those in dark pools,

have to be reported to the consolidated tape in real time. However, under the current system, investors can see only that a trade occurred somewhere off an exchange. They don't know which ATS executed the trade, or even whether it was executed in a dark pool at all.

Therefore, the Commission also proposed to create a similar level of post-trade transparency for ATSs, including dark pools, as for registered exchanges. Specifically, the proposal would amend existing rules to require real-time disclosure of the identity of dark pools and other ATSs on the public reports of their executed trades. As with the Commission's IOI proposal, this proposal also would exclude the identification of the ATS for large trades of $200,000 or more, to prevent potential detrimental information leakage that could interfere with the ability of institutions to efficiently trade large blocks of stock.[1] In considering post-trade transparency, some have suggested that such transparency may compromise proprietary trading strategies and allow the market to ascertain the trading interest of investors, while others have suggested that post-trade transparency disclosures do not raise such concerns.

Looking Forward

But these steps are just the beginning. As Chairman Schapiro has indicated, now is an appropriate time to take a broad look at the whole of U.S. equities market structure. Over the coming months, I anticipate that the SEC will consider additional issues relating to dark liquidity more broadly, perhaps by issuing a concept release.

Dark liquidity is offered not just by dark pools, but by large dealer firms that internalize customer orders, ECNs, ATSs, and registered exchanges, which have a variety of dark order types. As part of the Chairman's directive to take a broad look at market structure issues, the staff plans to examine whether the degree or nature of trading with dark liquidity has changed in recent years and, if so, whether it is having detrimental effects on the quality of the markets, such as efficient price discovery.

Another practice that is being examined by the Commission staff is high frequency trading. While the term lacks a clear definition, which partially explains the confusion on the subject, it generally involves a trading strategy where there are a large number of orders and also a large number of cancellations (often in subseconds), and moving into and out of positions, often many times in a single day.

High frequency trading plays a significant role in today's markets by providing a large percentage of the displayed liquidity that is available on the registered securities exchanges and other public markets. Many are concerned, however, that high frequency trading can be harmful, depending on the trading strategies used, both to the quality of the markets and the interests of long-term investors.

The Commission recognizes that concerns have been raised that high frequency traders have the ability to access markets more quickly through high-speed trading algorithms and colocation arrangements. This ability may allow them to submit or cancel their orders faster than long-term investors, which may result in less favorable trading conditions for these investors. This quicker access could, for example, enable high frequency traders to successfully implement "momentum" strategies designed to prompt sharp price movements and then profit from the resulting short-term volatility. In combination with a "liquidity detection" strategy that seeks solely to ascertain whether there is a large buyer or seller in the market (such as an institutional investor), a high frequency trader may be able to profit from trading ahead of the large order.

High frequency trading, however, can also play a constructive role. Some have argued that high frequency traders played a role in continuing to provide liquidity during the recent market turmoil. High frequency trading may also help to reduce market spreads. I expect that the Commission would seek the public's views on the potential benefits and drawbacks associated with high frequency trading, perhaps by issuing a concept release to explore these issues in greater detail.

Commission staff is also exploring ways for the Commission to use its statutory authority to assure that the Commission has better baseline information about high-frequency traders and their trading activity. This would help to enhance the Commission's ability to identify large and high-frequency traders and their affiliates.

Another market structure issue that the Commission staff is exploring is sponsored access—also known as "direct market access" or "DMA"—where broker-dealer members of an exchange allow nonmembers—in many cases, high frequency traders—to trade on that exchange under their name. As electronic trading has become the norm, this type of access to exchange execution systems has increased signifi-

[1] The proposals discussed above do not attempt to address all of the issues regarding dark liquidity.

cantly. In some cases, broker-dealers offer sponsored access to customers without requiring the orders to pass through the broker-dealers' systems. The appeal of the arrangement is that it helps preserve anonymity and enables the fastest possible trading. There are, however, a variety of risks involved when trading firms have unfiltered access to the markets. These risks can affect many of the participants in a market structure, including the trader's broker, the exchanges, and the clearing entities. Sponsored access could raise concerns about whether sponsoring broker-dealers impose appropriate and effective controls on sponsored access to fully protect themselves and the markets as a whole from financial risk, and to assure compliance with all regulatory requirements. The Commission staff is looking at these issues.

In evaluating these market structure issues, the SEC is focused on the protection of investors, maintaining fair, orderly, and efficient markets, and facilitating capital formation.

Thank you for giving me the opportunity to speak to you today on behalf of the Securities and Exchange Commission. I welcome any questions you may have.

PREPARED STATEMENT OF FRANK HATHEWAY

SENIOR VICE PRESIDENT AND CHIEF ECONOMIST, NASDAQ OMX

OCTOBER 28, 2009

Good morning Chairman Reed and Ranking Member Bunning. Thank you for the opportunity to offer my perspective on recent developments in U.S. equities markets. I speak as an economist who has studied equities markets for several decades from multiple vantage points—as an options trader on the floor of the Philadelphia Stock Exchange, as a Professor of Economics at Penn State, as an Economic Fellow at the SEC, and, currently, as NASDAQ's Chief Economist.

Based on my experience, while equities markets are in a period of rapid transformation, it is important to view developments such as flash orders, dark pools, and high frequency trading through a long lens. These phenomena are, generally speaking, iterations of constant market behavior adapting to new technology. The unmatched strength of U.S. markets is the continual ability of Congress, the SEC, and self-regulatory organizations to adapt to these iterations and protect investors during periods of change as well as stability.

Markets have always harnessed the power of speed and communication to drive trading efficiency—from telegraph, to telephone to fiber optics. Transparency and price discovery are continually evolving products of technology and market conditions. They reflect ever-present tension between average investors' needs for meaningful public reference prices and institutions' desires to execute block orders while minimizing market impact.

This history reveals the following sound principles with which to assess the latest market developments.

First, maximize efficient price discovery. Markets are most efficient at promoting price discovery when the participants in the markets are numerous and diverse, with divergent objectives from their investments and divergent views on value. Discovering the true value of securities requires maximizing transparency, display, and order interaction.

Second, encourage innovation and competition. Secondary markets function most efficiently when exchanges and nonexchanges compete to develop the most advanced trading technology to execute trades quickly, at the right price, and at a lower cost. Electronic markets and electronic traders, who built their business and technology to compete in this modern world, provide critical liquidity during good and bad markets.

Third, guarantee fair and equal access. The definition of "market" assumes fair and equal access to all market participants. Any step away from this principle and towards selective disclosure and access will tend to create a two-tiered market where sophisticated investors have unfair advantages over average investors. Selective disclosure and access also creates distortions to the market, with unknowable and unintended consequences.

Fourth, prioritize sound regulation. Markets and market participants are more likely to behave in an economically rational manner when trading rules are clear, fair, and rigorously enforced. Rapid detection and enforcement through real-time and post-trade surveillance are critical to fair and orderly markets.

Only by prioritizing public markets over private and average investors over professionals can we simultaneously achieve all four of these important goals: efficient price discovery, innovation and competition, fair and equal access, and sound regula-

tion. Consequently, orders should first attempt to execute in the public market before turning to the nonpublic markets. Without efficient price discovery, competition, access, and sound regulation in the public markets, there will be no accurate price for nonpublic market to reference.

Viewed through this lens, dark pools—meaning any market that does not offer pretrade price transparency—are potentially problematic on several grounds. They undermine public price discovery by shifting liquidity away from the lit markets, isolating displayed limit orders, widening public spreads, and decreasing execution quality. SEC Commissioner Elisse Walter wisely said recently: every share that gets executed in the dark does not contribute fully to price discovery. The question becomes how many dark shares are too many?

Based on comparisons between stocks with otherwise similar characteristics, execution quality begins to deteriorate when stocks experience dark trading in excess of 40 percent of total volume. At that point, the spread of the public reference price widens and execution quality deteriorates. This conclusion is based on studying snapshots of empirical data for the top 3,000 U.S. stocks by trading volume that individually trade in excess of $500,000 average daily dollar volume and 50,000 average daily shares.

This is not to say that dark pools don't have valued uses that are consistent with core market principles. The transparent markets have, since the beginning of markets, had difficulty in servicing the requirements of large "block orders" without market impact. Broker dealers have traditionally performed this necessary function, through the use of capital, trading acumen, and the transparent market. The broker dealer-operated block execution services are needed and must continue. Broker dealers have advanced their services through creative and innovative uses of technology.

NASDAQ supports the SEC's proposals, announced last week, to reposition dark pools. The SEC proposed to require full public display of "actionable indications of interest" or IOIs when dark pools execute greater than 0.25 percent of aggregate share volume. Many Dark Pools use IOIs to show trading interest to a select group of members without displaying that trading interest with the broader public. The SEC created an exception from the display requirement for block orders of $200,000 or more in value. The SEC proposals prioritize public markets, increase transparency, and encourage fair and equal access while still respecting the need for traders to execute block trades with minimal market impact.

One question I have as an economist is whether limits on using actionable indications of interest would be a binding constraint on dark pools. Even in the absence of actionable indications of interest, some market participants may employ "pinging" strategies to probe for and discover liquidity that is not advertised by outbound messages. In other words, is it systemically beneficial for dark pools to choose to remain completely dark no matter how large they grow?

Turning away from dark pools, NASDAQ also supports the SEC's proposals to ban the use of flash orders. Flash orders originated from and remain an accepted practice of floor exchanges, with the effectiveness of the "flash" limited by the distance a human voice could travel. As technology was added to floor trading operations, automation of these flash capabilities occurred through systems such as Block Talk on the NYSE. Later, fully electronic versions of this floor flash capability were introduced by the CBSX and Direct Edge.

After full consultation with the SEC, NASDAQ OMX was one of the last to offer flash orders. Most importantly, consistent with our core principle of fair and equal access, NASDAQ created a flash order type that was available to all investors rather than a select group of members. NASDAQ was then the first exchange voluntarily to cease offering the "flash" dark order type when Chairman Schapiro announced a comprehensive review of the use of flash orders. NASDAQ will submit a comment letter supporting the SEC's proposal to ban flash orders.

Recent commentary on flash orders and dark pools has wrongly conflated these market structure concerns with questions on the validity of market participants who engage in high-volume algorithmic trading. Price discovery is most efficient when the participants in the markets are numerous and diverse, with divergent objectives from their investments and divergent views on value. This philosophical view of proper markets is codified in our rules that mandate fair and equal access to all market participants.

Any step away from this principle will create distortions to the market, with unknowable and unintended consequences. Electronic markets and electronic trading is the foundation of modern markets. The activities of electronic market makers, who built their business and technology to compete in this modern world, provide critical liquidity during good markets and bad markets. These activities benefit all investors.

Speed in the execution of transactions is another way in which markets and market participants compete, and competition is the lifeblood of efficient markets. In turn, open, transparent markets facilitate competition. So long as information is available on an equal basis to all market participants, the increased speed at which transactions are executed provides tremendous benefits to investors by enhancing liquidity and reducing transaction costs.

As we reflect on the current state of the U.S. equities markets we see that investors had and continue to have faith that public markets are discovering, displaying, and making accessible the best price for each and all securities at all times. The steady, reliable performance of equities markets during this time is a result of a constant evolution of, and improvement of our markets.

PREPARED STATEMENT OF WILLIAM O'BRIEN

CHIEF EXECUTIVE OFFICER, DIRECT EDGE

OCTOBER 28, 2009

Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, I would like to thank you for the opportunity to testify today on behalf of Direct Edge, the operator of the third-largest stock market in the Nation. Over the past 2 years Direct Edge's market share of U.S. stock trading has risen to approximately 12 percent, up from only 1 percent in early 2007, because we have innovated in response to changing market structure to provide new solutions for brokers and their customers. Certain of these changes have triggered a debate over the past several months regarding the structural integrity of our equities markets, which is now at a critical juncture. Individual investors are in need of greater clarity and education as to how our stock market operates, and how to improve it. In this regard, the work of the Subcommittee in conducting this hearing is timely and valuable.

Direct Edge believes that current market structure issues should be framed so that investors understand how the evolution of stock trading benefits them, and that through careful examination, appropriate regulatory protections can be preserved without taking steps that would ultimately undermine investor confidence by restricting innovation, competition, and efficiency. To this end, Direct Edge offers guiding principles for any market structure reforms, in order to focus the current dialogue on what really matters—improving our stock market for the benefit of the Nation's investors.

1. Current market structure is fundamentally fair and sound

By every quantitative and qualitative measure, the U.S. cash equities market serves as a model for the world, performing as well as it ever has in terms of its liquidity, implicit and explicit transaction costs, and transparency. During the worst financial crisis of our lifetime, the U.S. equity market was continually liquid and efficient, while price discovery for certain other financial instruments, such as auction-rate and mortgage-backed securities, was virtually nonexistent. Recent developments have not materially eroded the efficiency of our marketplace.

While the evolution of the technology, functionality, and economics of trading require everyone to adapt, that should not be the root reason for market structure reform. Though trends and changes always require a continual analysis of how regulation needs to respond, this should not be confused with a broader need to re-architect our market due to any underlying fundamental flaw or unfairness.

2. High-frequency trading and technology are valuable components of modern market structure

The innovation and efficiency that technology has brought to stock trading inures to the benefit of every American investor. When decimalization came to the equities markets in April 2001, there was a near-total evaporation of traditional capital commitment, with market makers far less willing to provide competitive bids and offers as spreads narrowed. Firms willing and able to adapt to this new reality, along with new competitors, rose in their place with business models predicated on extremely efficient use of technology to facilitate our markets. Without these trading firms continuously providing liquidity, the market transition to pennies would have been much more turbulent and expensive for investors. The benefits of high-tech trading continue to this day in several forms, including more efficient price discovery, lower investor costs, and greater competition, which benefits all investors. All brokers have in some form deployed high-frequency technology, to the point that retail investors can have their orders executed in under a second via the Internet from anywhere on the planet.

As with the technological transformation of any market, issues have emerged that warrant close examination and likely new regulation. High-frequency trading strategies are now pursued by unregulated entities who have been given broker-like access to exchanges without adequate control of the compliance or systemic risks, often called "naked access". Exchange products that offer brokers a direct presence at exchange data and trading facilities—often called "colocation"—need to be regulated in the same manner as transaction and other exchange fees so that all investors have confidence that equal access and opportunity are being provided. Any evaluation of these issues and potential remedies should start, however, from a productive vantage point that when well-regulated, high-frequency trading and technology are generally healthy and positive.

3. Exchanges are not always the best place to execute a trade

Even though Direct Edge currently operates one exchange facility and has applied to operate two new exchanges, we do not believe that our market structure would be well served by requiring all orders to be placed on exchange facilities. The equity exchange and over-the-counter markets have existed symbiotically side-by-side for over 30 years, to the great benefit of retail and institutional investors. There are many legitimate economic, execution quality, and policy reasons why investors and their agents seek an off-exchange execution, whether in a dark pool, through an institutional or wholesale market maker, or other means.

Exchanges do, however, play a critical role in providing pretrade transparency and price discovery, which benefits those who trade off-exchange. The recent Securities and Exchange Commission proposal to increase the post-trade transparency of dark pool activity is an appropriate first step in monitoring the balance between on and off exchange trading and providing insight to the investing public. If the level of overall market share among exchanges were to fall precipitously below historical norms, it would be appropriate to examine what further steps would be needed to maintain the role exchange liquidity and price discovery plays in our market. But with on-exchange liquidity consistently above 70 percent in recent times, we are simply not near such a point.

To preserve the place of exchanges as central hubs of trading interest, regulation that drives the displayed exchange markets and nondisplayed off-exchange markets further apart must be avoided. Direct Edge pioneered the use of flash order technology in the equities markets precisely to give retail and other investors' access to dark pool and other off-exchange liquidity they previously never had access to, and our data shows investors receive better prices on their trades as a result. This is what any good exchange does—bring buyers and sellers together in a way that makes sense for all concerned. True inequities should be examined and eliminated, and the thoughtful approach the Securities and Exchange Commission has taken to date should be commended. But undue focus on optional, esoteric order types, at the expense of ignoring the broader trends that motivate customers to use these tactics, at a minimum would provide only false comfort to investors, and potentially leave them more at risk than ever before.

4. Brokers are best equipped to choose how to execute their customer orders

Every order type offered by an exchange or other market center provides some combination of immediacy, explicit fees, implicit costs, opportunity for price and/or size improvement and market impact. Investors that value an immediate execution above all else use market orders, taking the price the market gives them and foregoing a chance to do better. Those who seek price improvement use limit orders, knowing full well they may wind up not trading at all. There are countless other examples of how order flow should be managed in light of investor objectives and preferences.

Brokers are best suited to decide when and how to use the tools exchanges provide in executing customer orders. Delegation of the responsibility to manage these aspects of execution quality by an investor to a broker is, for all but the more sophisticated or self-directed investor, a critical concept in how markets operate. The vast majority of brokers fulfill their fiduciary obligations with integrity and extreme efficiency. While each broker brings their own perspective and execution strategy to the table, investors are free to choose among scores of reputable, experienced brokers using a range of criteria and information as the basis for deciding who to employ.

5. Equal access prevents "two-tier markets"

The broad array of market technologies and products that brokers have at their disposal is greater than ever. This empowers brokers to customize their order-execution approach to the needs of their business and customers. Every broker does not

do everything the same way, at the same speed, or with the same resources. Brokers choose which exchanges to become members of, and then choose to use the products or services offered by the exchange at their discretion. Investors participate by choosing their broker and level of self-direction they engage in. This is part of the fabric of competition, rather than a flaw in market-based capitalism.

When a broker or investor elects not to utilize certain functionality, technology, or strategies, it does not imply that those who do are somehow unfairly advantaged. Markets need to be fundamentally fair, but that is not achieved on the basis of attempting to mandate that everyone has "substandard but equal" capabilities. With equivalent access to exchanges for brokers and transparent competition for customer business among brokers, all market participants benefit from both fairness and differentiation.

6. In debating the need for market structure reform, a broad, data-driven approach is optimal

Market structure reform that takes the entire context of recent trends into account generally produces better results than issue-by-issue reforms. The National Market System encouraged by the Securities Act Amendments of 1975, the Order Handling Rules of 1996, and even Regulation NMS are all viewed as having successfully advanced the liquidity, transparency, and efficiency of our markets. Their strengths lie in the comprehensive nature of the approach taken. Emergency actions can be counterproductive because they tend to ignore root causes and the likely unintended consequences. When considering market structure reform, Direct Edge strongly believes in a "big picture" approach. We also highly value objective data over subjective intuition or conjecture. To do otherwise could alter a market structure that is generally performing well without an adequate basis for believing improvements will result.

Conclusion

Our stock market is the model for the entire world because we anticipate and implement change better than anyone, and adapting regulation is a key element of this. If we can address outstanding issues in a constructive fashion, focusing on how to improve regulation while promoting what currently works well, we will have provided a strong structural foundation upon which our Nation's economic recovery can be realized. Once again, I'd like to thank the Subcommittee for the opportunity to testify and I look forward to answering your questions.

PREPARED STATEMENT OF CHRISTOPHER NAGY

MANAGING DIRECTOR OF ORDER ROUTING STRATEGY, TD AMERITRADE

OCTOBER 28, 2009

Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, thank you for the opportunity to testify on equity market structure issues. I am Chris Nagy, Managing Director of Order Routing Strategy for TD Ameritrade.[1]

TD Ameritrade, based in Omaha, Nebraska, was founded in 1975 and was one of the first firms to offer negotiated commissions to individual investors following the passage of the Securities Act Amendments of 1975. Over the course of the next three decades, TD Ameritrade pioneered technological changes such as touch-tone telephone trading and Internet investing to make market access by individual investors more accessible, affordable and transparent.

TD Ameritrade has long advocated for market structures that create transparency, promote competition, and reduce trading costs for individual investors. As technology rapidly advances, it is ever more important that the SEC complete a

[1] TD Ameritrade is a wholly owned broker-dealer subsidiary of TD Ameritrade Holding Corporation (TD Ameritrade Holding). TD Ameritrade Holding has a 33-year history of providing financial services to self-directed investors. TD Ameritrade Holding's wholly owned broker-dealer subsidiary, TD Ameritrade serves an investor base comprised of over 5.2 million funded client accounts comprised from every State in the union with approximately $289 billion in assets (as of August 2009). TD Ameritrade continues to focus on serving individual investors, providing low-cost services, ranging from completely self-directed investors to those served by registered independent advisors. During August 2009, TD Ameritrade handled an average of 431,000 investor trades per day, representing an average of 478 million shares per day. We do not directly execute client orders, but rather act as agent in routing orders to the marketplace. We use our position in the marketplace to drive the markets to compete on price and cost. As a result of our efforts, during June–September 2009, we were able to obtain price improvement for 66 percent of our client share orders and saved our clients $12.5 million by getting them better than the then best price when they entered their order.

comprehensive review of the National Market System to ensure individual investors are not adversely impacted. At the same time, regulation has the potential to result in unintended consequences, making it critically important that rulemaking be based on empirical data and reasoned analysis.

Our Nation's stock markets have evolved dramatically in the last decade. In 2001, the average individual investor transaction took upwards of eighteen (18) seconds to receive an execution while today that same transaction is done in less than one (1) second. These changes primarily have been driven by technological innovation, but also in response to carefully crafted regulations. In fact, today the individual investor enjoys superior pricing, lightning-fast trade fulfillment, and ample liquidity. At no other point in the history of the markets has the individual investor been closer in terms of pricing with the institutional trader.

Gone are the days of slow human traded manual markets. The decline in manual trading was not only due to technology, but also Regulation NMS, which was designed to encourage fast quotes and limit order display, with the goal of ensuring investors obtain the best prices available in the markets. We also have witnessed a proliferation of market center competition for order flow, a result of technological innovation and Regulation ATS which lowered the barriers to entry. In addition, the move to decimalization early in this decade reduced spreads by up to 5¼ cents whose benefits went largely into the pocketbooks of individual investors.

It is natural in a highly competitive environment, particularly when combined with rapid technological innovation, for market evolution to occur. The facilitation of a National Market System, as called for in the Securities Acts Amendments of 1975, has provided a framework for this market evolution. As such, regulation has always been an integral part of the development of the National Market System, with the SEC refining rules such as requiring quote displays and ensuring that trades are rarely executed at inferior prices.

Dark Pools

Variations of Dark Pools have been in our markets for decades taking on various forms from a broker taking an order from an institution over the phone to a floor broker acting as agent on an order received via teletype. When Regulation NMS was enacted in 2005, exemptions to the display rule were granted spawning the creation of the modern day electronic Dark Pool. Because of decimalization, the declining size of the quotes, and the need to minimize market impact, institutional traders began seeking block trading alternatives or algorithmic trading. This market dynamic has given rise to well over forty Alternative Trading Systems transacting, by some estimates, 35 percent of all stock market orders each day. Retail clients have little ability to interact with these growing pools of liquidity. The irony is that dark orders receive their pricing from the transparent exchanges where retail client trades are executed. In many ways, Dark Pools are an excellent example of a two-tiered market that gives institutional traders a way to use retail order flow to their own benefit. Certainly no one intended for these exemptions to lead to such a stark, two-tiered system of trading. While there is benefit to Dark Pools reduce overall market impact, serious questions need to be asked if we have reached the tipping point.

Flash Orders, High Frequency Trading and Market Access

Innovative strategies that promote efficiency and reduce investor costs in the markets are critical if we are going to continue to level the playing field for individual investors. There has been much fanfare that flash trading is harmful to retail investors, however little data is offered to back these claims. Defenders of Flash argue that it allows users to lower transaction costs and obtain better prices in both the equity and option markets. Interestingly, it is estimated that Flash trading accounts for less than 2 percent of all market activity. Although TD Ameritrade can find no evidence that flash trading harms individual investors, our firm believes that Flash is a symptom of our current two-tiered market structure and that in many ways the perception that it is unfair and predatory became the reality. We fully support the SEC's goal of ensuring that Flash is not used to further two-tiered access and we support a comprehensive solution in this area.

High Frequency Trading on the other hand is estimated to be as high as 75 percent of all daily trading volume on our stock exchanges. The benefits cited are that High Frequency Trading provides additional liquidity to the markets. While perhaps true, the issue of High Frequency Trading is not of liquidity but rather one of capacity utilization. While High Frequency traders send millions of orders to exchanges they also send an equal number of cancellations leading to low fulfillment rates. Some stocks can see more than seventy (70) quote changes in a single second because of this activity. The sheer volume creates technological issues for the dissemination of market data to individual investors as they receive such data in their

homes perhaps thousands of miles away from the originating source. Meanwhile, High Frequency Traders subscribe to specialized data feeds and situate their technology on the exchanges' property, otherwise known as colocation. While colocation improves speed of execution for all parties including individual investors, oversight on how this process is administered is nonexistent. Moreover, some exchange members provide High Frequency Traders with direct access to the markets. These arrangements create systemic risk by allowing High Frequency Traders to act as *de facto* specialists without the capital obligations and at little cost while the rest of the market picks up their tab.

Conclusion

As we embark on an overhaul of our Nation's markets it is imperative that we continue to provide a low cost, competitive infrastructure that ensures individual investors have low barriers of entry, which, in turn, promote investor confidence and long-term investment into our Nation's markets. We must, however, ask if we have reached the tipping point with an excess of Alternative Trading Systems. Interestingly we can draw insight from a very different yet similar circumstance. During the Great Depression there was an overabundance of taxi drivers, which reduced driver earnings and congested city streets. To address the issue and restore a proper balance, the Medallion system was created placing a moratorium on the issuance of taxicab licenses. This system created the proper balance of taxis while not crowding city streets. In today's markets as we emerge from the recent market downturn, one must question if we have "too many taxis" fragmenting the streets of liquidity. We should seek a solution to provide competition in our markets without an over surplus of trading systems.

I appreciate the opportunity to appear before the Committee not only on behalf of TD Ameritrade but more importantly on behalf of our clients, individual investors.

PREPARED STATEMENT OF DANIEL MATHISSON

MANAGING DIRECTOR AND HEAD OF ADVANCED EXECUTION SERVICES, CREDIT SUISSE

OCTOBER 28, 2009

Introduction

Good morning, and thank you for giving me the opportunity to share my views on the best structure for our Nation's stock markets. My name is Dan Mathisson, and I am a Managing Director and the Head of Advanced Execution Services for Credit Suisse.[1]

The U.S. broker-dealer subsidiary of Credit Suisse Group has been operating continuously in the United States since 1932, when the First Boston Corporation was founded. Today, Credit Suisse is the market share leader in electronic trading,[2] and Credit Suisse owns and operates Crossfinder, the largest Alternative Trading System (ATS) by volume.[3]

Advanced Execution Services (AES) is a team of approximately 200 financial and technology professionals based in New York that executes trades electronically on behalf of mutual funds, pension funds, hedge funds, and other broker-dealers. AES currently connects with 31 U.S. trading venues, and we help clients solve the problem of fragmentation by electronically linking many market centers into one order. The AES group does not engage in proprietary or risk trading. 100 percent of our revenue comes from institutional client commissions, and therefore our success depends on our ability to minimize our client's transaction costs while providing safe and reliable trading systems.

I have been managing the AES group at Credit Suisse since founding it in 2001. Prior to that, I traded stocks for 8 years for a New York investment firm called DE Shaw & Co. In addition to my role at Credit Suisse, I am presently on the Board

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[1] Credit Suisse provides its clients with private banking, investment banking and asset management services worldwide. Credit Suisse offers advisory services, comprehensive solutions and innovative products to companies, institutional clients and high-net-worth private clients globally, as well as retail clients in Switzerland. Credit Suisse is active in over 50 countries and employs approximately 47,400 people. Credit Suisse is comprised of a number of legal entities around the world and is headquartered in Zurich. The registered shares (CSGN) of Credit Suisse's parent company, Credit Suisse Group AG, are listed in Switzerland and, in the form of American Depositary Shares (CS), in New York. Further information about Credit Suisse can be found at *www.credit-suisse.com.*

[2] Greenwich Survey, May 2009, Tabb Report, October 2009.

[3] Rosenblatt Survey, September 2009, Tabb Survey, September 2009.

of Directors for the BATS Exchange based in Kansas City, and I am a regular columnist for Traders Magazine, where I write about market structure issues. I appreciate the chance to appear here today representing Credit Suisse.

Summary

Credit Suisse supports fair markets for all investors, and fair access to all market venues. We believe that several of the recent changes in the trading and markets area proposed by the Securities Exchange Commission (SEC) are positive developments. For example, Rule 204, which we supported and which has already been implemented, has dramatically reduced "naked" short-selling. The proposed ban on flash orders is another positive step, and we support this change as well.

On the topic of dark pools, we believe that they merely automate a process that has always existed, and that they are beneficial to the U.S. market structure. However, we believe there is a problem with today's market structure, due to a lack of fair access to dark pools for all investors. Under Regulation ATS, dark pool operators are allowed to decide who can participate in their pool, and broker-dealers are often denied access to each other's pool for competitive or capricious reasons. We believe that markets work best when open to all, and therefore we propose that the Fair Access provision of Regulation ATS be changed to force all dark pools to be open to all broker-dealers, and through those broker-dealers, to the investing public.

While we acknowledge the need for fair access reform, we believe that much of the debate over dark pools is misguided and is fueled by a desire by exchanges to avoid healthy competition. We believe investors have a right to remain silent, and that dark pools and dark order types fill a critical need. Those who would compel dark pools to display bids and offers have the issue exactly backwards: we believe dark pools and dark order types help long-term investors, by giving them an avenue to trade without revealing sensitive trading intentions to short-term traders. We do not think that forcing investors to play poker with their cards face-up would solve any problems, though it would potentially create many new ones.

We believe that the "price discovery" argument is a red herring. Despite popular belief, dark pools must report all their trades immediately to the consolidated tape, and dark pools have always been, and will remain, a niche product that will not lead to the end of publicly displayed bids and offers.

In summary, we believe that the key to a strong and resilient stock market is a healthy competition for order flow among multiple venues, whether dark or light, along with mandated fair access to each of them.

The Role of Dark Pools

Selling 200 shares of ABC without moving the price is easy. Selling 2,000,000 shares is difficult—if word leaks out that a large pension fund or other big investor is selling millions of shares, institutional buyers of ABC will pull back, anticipating a price decrease, and other sellers will be more aggressive, driving the price down. The result of this information leak is that the stock would likely drop quickly, potentially costing the pension fund a lot of money.

To avoid this scenario, institutional traders, and the brokers who trade on their behalf, expend a great deal of effort figuring out ways to buy and sell large amounts of stock that avoid signaling that a large investor is buying or selling. This has always been the case. To accomplish it, traders use a variety of trading techniques to reduce trading signals. There are four main types of signals that can reveal a trader's intentions to others: traditional phone calls, electronic messages like "IOIs" (Indications of Interest), reading patterns within the "tape," or displaying bids and offers on exchanges.

Of the four types of signals, displayed bids and offers are the most obvious signals, and therefore the most dangerous for investors—by design, displayed bids and offers are immediately shown to every trader in the marketplace. Therefore, the decision to display a bid or an offer is not made lightly by an institutional trader.

Before computerized "dark pools" existed, traders often chose to keep their bids and offers undisplayed, to avoid sending a signal of their trading intentions to the marketplace. This was accomplished by giving a "not-held" order to the floor brokers on the exchange who would then keep sensitive orders "in their pocket." The broker would literally drop the order ticket in his pocket, without displaying it to the world, while keeping his eyes and ears open for the other side of the trade. This process also occurred at the specialist post on the exchanges, and in the "upstairs" market, where brokers would hold client orders while looking for the other side.

A "dark pool" merely automates this age-old process. Traders drop orders into the computer's "pocket." The computer, just like the floor broker of old, does not tell anyone about the order in its pool. If the other side of the trade happens to also drop into the pool, the computer matches the two orders, and a trade occurs.

Computerized dark pools have been around since 1987. Today, they are an enmeshed part of the trading ecosystem, and they exist because they fill a need: the need for an institutional investor to be able to trade without telling the entire world that a new buyer or seller has entered the marketplace. Since decimalization, the number of shares required to be considered potentially "market-moving" has decreased, as the average trade size dropped from over 1400 shares in 1999, to under 300 in 2009. In a decimalized environment of constant small trades, even small orders can benefit from dark pools.

Questions have been raised about whether dark pools contribute to "price discovery." Dark pools must report all trades to the consolidated tape immediately, and their prints are a valuable source of "last trade" data. When buying a house, buyers determine the appropriate price based on the prices at which similar houses actually sold in the neighborhood. Asking prices are interesting, but actual home sales are far more important. To assert that "last trade" data from dark pools does not contribute to price discovery is disingenuous.

The next question that is raised by dark pool opponents is: what if all bids and offers went dark? Would there no longer be a quote? Current estimates are that dark pools make up 8.6 percent of consolidated U.S. equity volume,[4] which we believe is in line with historical amounts from when the dark market was "upstairs" or run in the pockets of floor brokers. Dark pools fill a particular niche in the trading ecosystem, and they are here to stay, but we think scenarios of them taking over entirely are far-fetched and do not need to be addressed further.

Exchanges, which are for-profit entities, are natural competitors to dark pools. Every share matched silently on a dark pool is by definition a share that the exchanges have lost to rigorous competition. Therefore, the exchanges are understandably advocating for their interests by cloaking their arguments around rhetoric such as "price discovery" and "transparency." They are also trying to harness the current debate around high-frequency trading to try to somehow link it to dark pools in an attempt to increase the regulatory costs for dark pool operators.

But the argument that dark pools are somehow part of the high-frequency trading debate simply does not make sense. High-frequency traders make their money by digesting publicly available order information faster than others; dark pools hide order information from everyone. Moving orders out of dark pools and onto exchanges would enable high-frequency traders to use new streams of information that are today kept quiet. This would not help retail investors, long-term investors, or the capital markets.

Recommended Regulatory Changes To Ensure Fair Markets

Credit Suisse believes that several of the recent changes in the trading and markets area proposed by the SEC are positive developments and will help to ensure fair markets. However, one critical need has not yet been addressed—fair access to all market venues. While we believe that dark pools play a critical role in the marketplace, institutions searching for liquidity across dark pools do face a fragmentation problem.

Currently, Regulation ATS allows dark pool operators to decide which broker-dealers can participate in their pool. There is a "fair access" requirement, but it is not effective. The current rule requires that ATS's only have to open their system to all users in any individual stocks where they have exceeded 5 percent of the volume for 4 of the past 6 months. On top of that very high bar, there is a long list of exemptions, including exempting any ATS that systematically prices at the midpoint of the bid and ask.

Last week, the SEC proposed lowering the threshold for quoting by ATS's when they send out so-called "IOI's" (which are electronic messages that reveal trading information). The SEC specifically decided to split the quoting threshold from the fair access threshold. Credit Suisse believes that the SEC needs to focus on the issue of ensuring that all broker-dealers have the ability to access all ATS's, enabling all broker-dealers to send dark orders to all dark pools. We propose the 5 percent threshold on the Fair Access provision be removed, and that all investors receive an equal opportunity to swim in all dark pools. Regulation NMS effectively connected the Nation's exchanges. A simple change in the fair access provision of Regulation ATS could do the same for dark pools.

The Role of Flash Orders and High-Frequency Trading

"Flash" refers to orders that exchanges post for a fraction of a second to subscribers of their data feed before forwarding them to another exchange. Flash orders

[4] Rosenblatt Securities, "Market Structure Analysis and Trading Strategy", September 30, 2009.

were created in 1978, when an exemption was included as part of what is now Rule 602 of Regulation NMS. Credit Suisse supports the proposed ban on flash orders.

But while we support the proposed ban, it is worth noting that we do not support it for the reasons flash orders have been opposed in the media. Opponents of flash orders have repeatedly stated an incorrect argument: that flashes represent non-public information only available to a group of privileged insiders. This is not correct—anyone can subscribe to the exchange data feeds and anyone has the opportunity to read flash quotes. Several of the major exchanges provide their data to the public for free, while others charge a nominal monthly fee that must be approved by the SEC. It is important to the debate to acknowledge that flash orders are in fact publicly available information, and that orders "flashed" are done so at the request of the "flashing" client.

The reason that we do support the proposed ban is that flash orders are allowed to virtually lock the market for a fraction of a second. "Locking" a market means that the highest bid is the same as the lowest offer. Regulation NMS expressly banned locked markets, mandating that a bid and offer at the same price must trade. Flash orders therefore violate the spirit of Regulation NMS and weaken the concept of a national market system.

High-frequency trading is linked in the debate to flash orders, but unlike flash orders, it is an undefined term. High-frequency trading is conceptualized as very short-term computerized trading, in which traders go in and out of stocks at high speeds. But how fast to qualify as a "high-frequency trader" is unclear—is a trader who goes in and out of a position once every 5 minutes a high-frequency trader? How about once an hour? Once a day? Most in the industry seem to use Justice Potter Stewart's "I know it when I see it" obscenity definition, but the result is that estimates of high-frequency trading range from 10 percent up to 60 percent of the volume. Credit Suisse believes the lower bound seems to be closer to the truth, but the lack of a formal definition makes it impossible to estimate what percentage of the marketplace they make up, or to perform any rigorous quantitative analysis to evaluate their effects.

We believe the focus at this point in the debate should be on creating a clear and specific definition of high-frequency trading, so that analysts and academics can perform rigorous studies, and we can separate the facts from the conspiracy theories. Only after rigorous study of the nature and impact of high frequency trading should any remedies be prescribed.

Equal Access and the Advantages of Technology

There is a big philosophical debate behind many of these questions: what does "an unfair trading advantage" actually mean? Is it unfair if a trader has any advantage at all, or just unfair if they have an advantage that can't be replicated by others?

A staple of the argument against high-frequency trading is that these traders have an informational advantage, since most people don't have the technology to read and respond to market data in a split-second time frame. This raises the question of why we would single out technological advantages without also looking at other types of advantages—no one has been suggesting that it is unfair to spend more money on fundamental research, for example, or to hire smarter or faster-thinking traders.

The question should not be: do people who have invested in technology and figured out how to build smarter or faster computers have an advantage? Of course they do, as they would in any industry or undertaking. The question should be: do they have unfair access that others can't replicate?

Here, we believe the answer is clearly no. High-frequency traders base their investment decisions on publicly available market data. They buy computer hardware the same way everyone else does. And they compete for computer programming talent in the same job market as every other company in America. In short, there are no unfair barriers to entry: any entrepreneur can buy machines, hire programmers, subscribe to the public data feeds and attempt to become a successful high-frequency trader.

The only example that is used to demonstrate their "unfair" advantage is around the issue of colocation. "Colocation" refers to the practice of setting up your trading computers in the same physical building as the exchange's computers, to get a time advantage over your competitors. Like "dark pools" being the 21st century version of floor brokers putting order tickets in their pocket, colocation is the 21st century version of traders trying to get office space close to the exchange. In the days before the telephone, brokers would send "runners" down the block to deliver orders. The closer a broker's office was to the exchange, the faster they could execute orders, which was a major selling point for brokers that were clustered near the exchanges.

Today, firms do the computerized version of the same game of trying to stay physically close to the exchanges. Credit Suisse has hundreds of computers located in a data center operated by a third party, where several exchanges and many other brokers and trading firms cluster their machines. As in days of old, physical proximity to the exchanges and speed of execution remains a major selling point. And the general public can get access to the benefits of sophisticated technology and co-located machines by selecting a technology-savvy broker-dealer to transact on their behalf.

If data center owners discriminate against giving leases to certain brokers or traders, it would be unfair, just as it would've been unfair in the old days for landlords near the exchange to refuse to lease to a particular ethnic group. But there is no evidence of unfairness in the market for data center leases, and it was reported last week that NASDAQ voluntarily agreed to have access to their data center regulated by the SEC going forward.[5]

Therefore, while fair access is critically important, Credit Suisse does not believe there is currently any unfairness of colocation access. More generally, we oppose regulatory changes based on disparities that result from some firms investing in technology while other firms choose not to.

Conclusion

Credit Suisse believes that the main principles governing market structure decisions should be the principles of fair access and information protection. Fair access does not mean equality of results or forced equality of technological capabilities—it means an equal opportunity to participate in trading destinations, whether displayed or dark, and an equal opportunity to invest in technology and processes that allow investors to perform their best.

Fair access, when combined with the existence of multiple venues, both dark and light, and protected by Regulation NMS and a robust Best Execution standard, add up to a marketplace where all buyers and sellers have an equal opportunity to achieve the best price. And it adds up to a competitive marketplace where exchanges and dark pools compete over technology and techniques to the benefit of all investors.

Information protection means that investors have a right to ask their brokers to keep their orders "in the pocket." It means acknowledging that investors have the right to remain silent, and that they deserve access to dark pools and dark order types that fill this critical need.

In summary, we believe that:

1. Fair Access to all exchanges and dark pools is the solution to solving problems of inequality in the markets. The "Fair Access" provision of Regulation ATS should be overhauled to allow all investors to participate in all dark pools. Access to ATS quotes is not enough.
2. Attempting to steer orders from dark pools to displayed exchanges is misguided and would benefit short-term information-based traders, at the expense of big long-term investors.
3. High-frequency trading is a term that needs to be officially defined by the SEC before it can be properly analyzed or evaluated, and careful analysis is needed before prescribing remedies for problems that may not exist.
4. Disparities that result from differentiated levels of investment in technology are natural. It is only unfair if the opportunity to invest and build similar technology does not exist.

Thank you for the opportunity to appear today and I will be happy to answer any questions that you may have.

PREPARED STATEMENT OF ROBERT C. GASSER

PRESIDENT AND CHIEF EXECUTVE OFFICER, INVESTMENT TECHNOLOGY GROUP

OCTOBER 28, 2009

Introduction

Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, thank you for the opportunity to testify this morning on current issues affecting U.S. market structure. As a fully transparent and neutral player in the industry,

[5] *Traders Magazine,* October 22, 2009, "SEC to Regulate NASDAQ's Colocation Business", by Peter Chapman.

I would like to offer ITG's unbiased, fact-based perspective on these issues to help you better understand the current trading landscape.

ITG is a NYSE listed Company with 18 offices across 10 countries employing nearly 1,300 people worldwide. As a specialized agency brokerage firm, ITG provides technology to a broad collection of the globe's largest asset managers and hedge funds, allowing them to independently source liquidity on behalf of their clients. Throughout our 22-year history, we have grown our business in the best traditions of U.S. innovation and market leadership.

In 1987, POSIT was launched as one of the first "dark" electronic matching systems. Since then, ITG's POSIT crossing system has harmoniously existed within U.S. market structure, including the Regulation ATS and Regulation NMS frameworks in more recent years. We firmly believe that institutions need a place to confidentially interact with each other to find natural block liquidity. Nondisplayed pools of liquidity such as POSIT provide a valuable solution for the buyside to comply with their obligations as fiduciary to offer their clients the best possible execution. Our analysis of millions of institutional trades post the advent of Regulation NMS confirms that POSIT reduces market impact of block trades and enhances execution quality.

In my testimony today, I will begin by addressing the role of "dark pools" and other undisplayed quotes historically in our markets. I will outline the advantages nondisplayed pools of liquidity provide for the marketplace, along with the concerns that exist today about the activities within such pools and their effect on the broader markets. I will then describe the effects of high-frequency trading on the markets, and discuss the advantages and disadvantages that have been cited for such techniques. Finally, I will provide our views on several topics that seem destined for further regulatory scrutiny: sponsored access and exchange colocation.

Dark Pools

Contrary to their pejorative name, dark pools have played a positive role in the transformation of the U.S. equity markets over the past decade. As SEC Commissioner Kathy Casey herself points out, there is nothing sinister about dark pools; they exist for legitimate economic reasons. Institutional investors seeking to make large trades have always wanted to avoid revealing the total size of their order. This, in turn, benefits the millions of individual investors who invest in mutual funds and pension plans. Without a facility like POSIT, institutions with a natural interest in trading with one another would be subject to unnecessary frictional costs.

We whole-heartedly embrace and support the broad concepts the SEC highlighted during its open meeting last Wednesday. The staff of the SEC's Division of Trading and Markets exercised a tremendous amount of care and diligence in their examination of current U.S. market structure. We interpret the SEC's recent pronouncements as establishing a bright line between truly dark pools and lit pools with an exception for block liquidity. We welcome the clarity. As a truly dark pool, POSIT will continue to provide large executions and price improvement to its customers.

Academic research demonstrates that market fragmentation (including the proliferation of dark pools and other off-exchange trading venues) does not harm market quality. We support efforts to increase post-trade transparency, so long as the rules are applied consistently across the competitive landscape. In fact, we believe that the data arising from such transparency will better enable market participants to measure the quality of the executions that they receive from the various trading venues, thus enabling them to make better routing decisions in the future.

Indication of Interest

Indications of interest, commonly known as IOI's, have become a commonly accepted method by which brokers and their clients communicate trading interest to one another efficiently. In the past couple of years, IOI's have empowered what we consider to be a potentially harmful mutation in market structure by which various ATSs can in effect create an "inside" market by sharing actionable IOI's selectively while still operating with no requirement to display that message. This practice has the potential to create a two-tiered market of participants with and without access to information. The SEC has deservedly focused on this issue and is recommending appropriate action to eliminate the grey area between lit and dark marketplaces.

High Frequency Trading

As a pure agent and independent observer of high-frequency trading, ITG does not have a stake in the use of this practice. However, we are committed to looking out for the best interests of our clients and the future of U.S. market structure. We hold the view that high-frequency trading plays an important role in the marketplace. Specifically, high-frequency firms take risk, commit capital, and provide liquidity in all market conditions.

In today's highly evolved market, these high-frequency firms are both large customers of exchanges/ECNs as well as some of their strongest competitors. Accordingly, these firms are able to provide cost saving opportunities for broker dealers that are ultimately passed on to retail and institutional investors. Many of the high-frequency firms are broker-dealers and, as such, are subject to the oversight of the SEC and FINRA. Furthermore, many serve both institutional and retail clients and are critically assessed on the quality of their execution. Hence, these firms do not fly under the regulatory radar.

Sponsored Access

However, we do have concerns about "sponsored access" and the risks it potentially creates for market participants. Sponsored access generally refers to the practice of a broker-dealer member of an exchange providing other market participants (possibly nonregulated entities) with access to that market center without having the sponsored participant's orders flow through the member's systems prior to reaching the market center. One of the concerns associated with sponsored access is that the service can be provided without rigorous compliance oversight and/or appropriate financial controls. We believe that the issue of sponsored access firms deploying high-frequency strategies on behalf of nonregulated entities deserves regulatory scrutiny.

It is important to realize that the issues of high frequency trading and sponsored access are not black and white. Clearly, outsized returns generated by questionable trading practices must be scrutinized. However, retail and institutional clients benefit greatly today from the liquidity provided by high frequency firms, which generate reasonable returns in relation to the risk they assume. To impair that through broad-brush regulatory intervention without a targeted focus on abusive practices and the potential risks of sponsored access could possibly harm the continuity and quality of U.S. equity markets.

Equal Access to the Markets and Exchange Colocation

U.S. exchanges have logically become mission critical technology providers to the brokerage industry. They now "host" brokerage firms within exchange owned and operated data centers and provide access to the circulatory and respiratory system of today's national market system: market data and the matching of executed trades. It is our hope that the SEC will provide similar clarity on the issue of colocation within exchange data centers in a future concept release. No firm should enjoy an advantage over another firm based on physical proximity to exchange technology. Principles of fair access and transparency must be applied equally to this issue.

Conclusion

While we support the SEC's recent proposals, we are wary of the dangers of unintended adverse consequences for market structure. We note that Regulations ATS and NMS did produce the competition and innovation that they were intended to foster without compromising investor protection. The increased competition evidenced by the existence of approximately 40 execution venues in the U.S. market has reduced transactions costs and increased executions speeds without degrading the transactional or informational efficiency of the U.S. equity markets. To the contrary, U.S. market systems withstood the demands of unprecedented volatility and transaction volumes through the financial turmoil of last fall with remarkable stability and resiliency. The confidence that global investors have in the efficiency of the U.S. National Market System is well placed. This confidence is essential to U.S. leadership in the formation of capital. All of our collective efforts toward structural reform must focus on the preservation of this confidence.

Exhibit A

Biography of Robert Gasser, CEO and President of Investment Technology Group—Bob Gasser is Chief Executive Officer and President of Investment Technology Group. Mr. Gasser was previously CEO at NYFIX, Inc., a global electronic trade execution firm. Before NYFIX, Mr. Gasser was Head of U.S. Equity Trading at JPMorgan. Concurrently, Mr. Gasser served on the Board of Directors of Archipelago Exchange as well as on the NASDAQ Quality of Markets Committee and the NYSE Upstairs Traders Advisory Committee. Mr. Gasser holds a Bachelor of Science degree from Georgetown University, School of Foreign Service.

Exhibit B

Culs de Sacs and Highways

August 2008

ITG® INVESTMENT TECHNOLOGY GROUP

Cul de Sacs and Highways
An Optical Tour of Dark Pool Trading Performance

Ian Domowitz
Managing Director
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Henry Yegerman
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Introduction

Crossing systems, now often called 'dark pools,' were early developments in the evolution of electronic trade execution. Investment Technology Group's (ITG) POSIT® system, for example, came on the scene as early as 1986. Although POSIT's list trading mechanism is highly sophisticated, the basic mechanics behind single stock crossing are simple and easily understood. Yet, with the exception of a couple of after hours crossing systems, there were few competitors in the crossing space until recently. In fact, several major exchanges around the globe attempted to add a crossing facility over time, but failed to do so successfully.

The reason behind such historical failures is cost. We don't mean the explicit cost of building the system; rather, the cost of accumulating and maintaining a sufficient liquidity pool to enable trade execution in a completely anonymous and confidential environment. Hardware and software are cheap; liquidity remains an expensive commodity.

In contrast, the trading landscape today is cluttered with competing dark pools. A partial listing is given in Table 1. Estimates range from nearly forty in the U.S. to over sixty globally. The key point is that the vast majority of these pools have come into existence, at least in the form of alternative trading systems as opposed to pure internalization engines, in the last couple of years. What happened?

Table 1: A Partial Listing of Dark Pools in the United States

Provider	Dark Venues
Bloomberg	BlockHunt
BNY ConvergEx	ConvergEx Cross
Citadel	Ex Svs
Citi Markets	LIQUIFI
Credit Suisse	CrossFinder
eSpeed	Aqua
Fidelity	CrossStream
Goldman Sachs	Sigma X
Instinet	VWAP Cross; Intraday; End of Day; Continuous
ISE	MidPoint Match
ITG	POSIT Match; POSIT Now; POSIT Alert
Knight	Knight Match
Lehman Brothers	LCX
Liquidnet	Liquidnet; H2O
Merrill Lynch	MLXN; AXP
Morgan Stanley	Trajectory Cross; MS Pool
NASDAQ	End of Day Cross; Open; Intraday; Continuous
NYFIX	Millennium; Natural
NYSE	Matchpoint
Pipeline	Pipeline
Pulse	Block Cross
State Street	Lattice
UBS	UBS PIN
Consortiums	BIDS; LeveL

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The authors have benefited from input garnered from a variety of people, including David Provost, James Wong, Hans Heidle, and the members of the ITG Research Committee, in particular.

Algorithmic trading happened. Algorithms probe for liquidity at favorable prices; that is their basic function. With the advent of the ITG Dark Algorithm® and Credit Suisse's Guerrilla, the intelligence of algorithms focused on the search for hidden liquidity, and others quickly followed in the guise of 'liquidity aggregators.' With all these search engines, it no longer was necessary to build liquidity pools on the same scale as a few years ago. The cost of crossing mechanisms dropped, and the number of dark pools exploded.

Since a liquidity pool of a size necessary to support block crossing is no longer necessary, execution sizes in most pools may be quite small. Small size obviates one of the basic reasons crossing systems were envisioned and built in the first place. Information leakage, never a factor in the first generations of crossing systems, also becomes a potential issue. The purpose of this paper is to explore these possibilities, using transaction costs as a metric of execution performance.

In particular, the results of this study suggest that direct access to a crossing system is superior to a search of alternative dark pools using a liquidity aggregator, in the sense of lower transaction costs and larger execution size. A rationale for this finding is suggested by the following simplified imagery.

Sending an order directly to a standalone crossing mechanism is like entering a cul de sac without a street light. Any execution that takes place within the cul de sac is done in a confidential and anonymous environment; the cul de sac is truly 'dark.' If the order is not completely filled, the residual exits the cul de sac and returns to its sender. If the order is sent via the mechanism of an algorithmic liquidity aggregator, residuals effectively leave the cul de sac and take the highway to another, repeating this process over time. The highway itself has street lights; traditional trading footprints may be seen, even if each cul de sac lacks a light. Footprints are information, and it becomes more difficult to execute an order at a favorable price. Measured transaction costs rise as a result. We explore a few possible reasons for lights on the highway in the conclusion to this paper, including identifiable multiple prints, simultaneous use of dark and transparent markets, and gaming.

In light of these developments, we provide evidence with respect to the following set of questions:

- ***Does trading in dark pools add value, relative to alternatives, in the sense of reducing transaction costs?*** A comparison of periodic crossing, continuous crossing, and a mix of alternatives inherent in our transaction cost database, suggests that the answer is 'yes.'
- ***Is there value in a periodic, or point-in-time, cross, in which liquidity is pooled in a single venue at particular times, relative to continuous crossing or liquidity aggregation on a continuous basis across dark pools?*** We also provide a positive answer to this question.
- ***Is there increased risk of slippage by using a liquidity aggregator, relative to direct access to a crossing system?*** The answer to this question is quantified by looking at the distribution of outcomes across order executions, and we do find that there is a much higher incidence of outliers in terms of trading performance when an order is exposed to multiple dark pools.
- ***Are there differences in execution quality across dark pools?*** Transaction costs are analyzed for ten such pools. We find that, not only are there differences, but they also can be quite large.

- ***Is the fragmentation of dark pool liquidity, in the sense of multiple venues, adding value in terms of generating block-size executions?*** Examination of average execution size across the same ten pools delivers a resounding 'no' to this question.
- ***Does the use of a liquidity aggregator, touching multiple pools, have an effect on execution performance?*** This question can only be answered by looking at an alternative for which there is a comparison of direct access only. We find that the highway analogy is appropriate, in that touching multiple pools generates higher transaction costs as the time to complete an order increases.

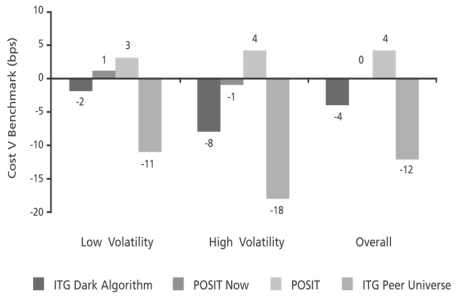
Our results are based on a sample of approximately 12.6 million orders entered during 2007. Execution data is derived from a combination of trades done in POSIT, POSIT Now, POSIT Alert, and a liquidity aggregation algorithm that touches ten of the largest dark pools in the U.S.

We set the stage by looking at the aggregate performance of periodic and continuous crossing, relative to a mixture of activity that includes trading in the open market.

Trading in the Dark Matters

Figure 1 illustrates comparisons of periodic crossing, continuous crossing, liquidity aggregation, and aggregate data gathered from the trading activity of a large sample of buy-side firms, comprising an additional 8.2 million orders. Transaction costs are based on an implementation shortfall benchmark[1]. Here, and elsewhere in the paper, negative numbers represent losses relative to the benchmark, while positive values are gains relative to the benchmark.

Figure 1: Trading Costs Vs. Broker Placement



[1]Unless stated otherwise, the benchmark is sell-bid, buy-ask; if the order is a sell, the bid is used as the arrival price, mirrored by the use of the ask for buys. All costs are calculated based on the time the order is placed with the broker, since this is the most accurate available to calculating comparisons of alternative trading mechanisms, removing any delay on the part of the buy-side desk in transmitting the order.

The first result confirms a basic intuition: trading in the dark appears to be superior to a mix of execution styles in the general population. This is true regardless of volatility regime, which may be a surprise to those who believe that crossing systems should be avoided in high volatility environments. Under such conditions, the average cost per share in the universe is 18 basis points (bps). In contrast, POSIT delivers an average cost which actually is a gain relative to decision price, while the continuous crossing mechanism costs a single basis point and dark liquidity search carries an average cost of 8 bps. Looking over a mix of high and low volatility conditions, average cost in the population is 12 bps, while continuous crossing exhibits zero slippage, and liquidity search costs about 4 bps.

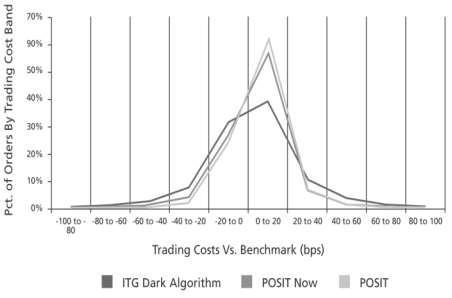
Taken together, these results illustrate two points. First, trading through confidential crossing mechanisms is beneficial on average, regardless of the exact nature of the process, whether periodic as in POSIT, continuous as in POSIT Now, or through a dark liquidity search algorithm. Second, direct access to a periodic crossing system appears to be superior to continuous crossing or liquidity search. Interestingly, this conclusion echoes a widely-held belief in academic research, which has emphasized the theoretical optimality of gathering liquidity together at a single venue and single point of time. Average costs are only part of the story, however, and we turn to evidence with respect to the risk involved in generating abnormally high transaction costs in dark pool systems.

Crossing Networks Have Less Slippage Risk Than Liquidity Aggregation

We now concentrate on dark pool executions. Figure 2 contains graphs of the statistical distribution of transaction costs for the periodic and continuous crossing mechanisms, as well as for dark liquidity aggregation. We limit this analysis to orders completed within thirty minutes of submission, for the sake of brevity.

Although the average costs previously reported for the periodic and continuous cross differed somewhat, the distributions of costs are similar to the naked eye. There are differences in the calculated

Figure 2: Cost Distribution By Venue: Orders Completed 0-30 Minutes



probabilities, however. For example, the probability of obtaining a transaction cost between -20 bps and 20 bps (the approximate center of the distributions) is 88 percent for POSIT and 77 percent for POSIT Now. Those figures change only slightly if one changes the benchmark to the midpoint at the time of order submission, for example.

In contrast, the probability of obtaining such a favorable outcome via trading through a liquidity aggregator is 61 percent, about 30 percent worse than direct access to the periodic match. This difference between mechanisms grows sharply when one looks at distinctly unfavorable outcomes. The probability of cost being greater than a 20 bps loss is 20 percent for dark liquidity aggregation, as opposed to only 10 percent for the continuous match and 4 percent for the point-in-time cross. The probability of an order executing at a cost worse than a 40 bps loss is only about 1 percent for POSIT, but is close to 10 percent for dark liquidity aggregation, even with a short horizon of 30 minutes in terms of order duration to completion.

The conclusion is simple: direct access to crossing systems, represented here by POSIT and POSIT Now, result in significantly fewer outliers in terms of trading performance. As a result, they represent less risk than shopping the order around to multiple dark pools. Direct access to a crossing system simply represents more certainty in terms of execution quality.

Looking Across Different Dark Pools

Until now, we have concentrated on ITG's crossing systems, for which we have detailed data. We do, however, have information on the transaction cost characteristics of dark pools used by the liquidity aggregation algorithm. Table 2 illustrates transaction costs for seven commonly used dark pools, in addition to POSIT, POSIT Now, and POSIT Alert, ITG's large block trading mechanism. These include Pipeline, Level ATS, ISE Midpoint Match, Knight Match, the Morgan Stanley Dark Pool, NYFIX Millenium, and the UBS Price Improvement Network (PIN)[2]. We also extend the analysis to include transaction costs differentiated by the time to completion of the order, represented by 30 minute blocks up to three hours. The analysis now is restricted to orders sent to these various destinations by the liquidity aggregation algorithm.

[2]Although a comparison with Liquidnet would be desirable, that system is not accessed by the liquidity aggregation algorithm and does not appear in our data.

Table 2: Transaction Costs Across Dark Pools by Order Duration

Benchmark = Sell-Bid / Buy-Ask (Bps/Share)	Cost Vs. Benchmark By Minutes to Complete Order					
Venue	0 - 30	30 - 60	60 - 90	90 - 120	120 - 150	150 - 180
POSIT Now	4	(2)	(13)	(9)	(14)	(12)
POSIT	6	3	(4)	(10)	(8)	(7)
POSIT Alert	2	(6)	(13)	4	(25)	(15)
PIPELINE	3	5	(13)	(6)	(12)	0
Boston Equities Exchange, LEVEL ATS	(2)	(16)	(17)	(24)	(22)	(29)
ISE Midpoint Match	(0)	(7)	(10)	(13)	(20)	(21)
KNIGHT MATCH	(3)	(6)	(33)	(18)	(29)	(32)
Morgan Stanley Dark Liquidity Pool	7	(8)	(13)	(10)	(25)	(27)
NYFIX - MILLENNIUM	(2)	(8)	(12)	(20)	(24)	(23)
UBS Price Improvement Network	(1)	(6)	(11)	(11)	(31)	(17)

POSIT outperforms relative to other liquidity pools almost 95 percent of the time, across order durations. No matter how long it takes to complete an order, at least within the table's three hour window, POSIT's main competition with respect to performance is POSIT Now and POSIT Alert, with Morgan Stanley outperforming by a single basis point only in the first thirty minutes.

No one can definitively say that relative performance in terms of transaction cost is related to execution size or the number of executions required to complete an order. On the other hand, there are distinct differences in execution size across dark pools. We suggested in the introduction that the increase in the number of dark pools did not correspond to an increase in block liquidity, and may have lessened it. Table 3 illustrates this point. Average execution size is presented for each dark pool in our sample, and for each time horizon in terms of order completion.

Table 3: Execution Size Across Dark Pools by Order Duration

	Average Execution Size By Minutes to Complete Order					
Consolidated Venue	0 - 30	30 - 60	60 - 90	90 - 120	120 - 150	150 - 180
POSIT Alert	29,143	25,527	24,405	25,078	22,465	23,582
PIPELINE	27,140	26,163	27,617	24,588	25,203	21,458
POSIT	7,044	5,161	4,577	4,058	2,894	3,354
POSIT Now	4,278	2,792	2,734	2,354	2,229	2,083
Boston Equities Exchange, LEVEL ATS	649	528	476	461	404	374
ISE Midpoint Match	632	534	492	518	481	455
KNIGHT Match	610	576	631	577	638	625
Morgan Stanley Dark Liquidity Pool	573	365	385	320	348	324
NYFIX - Millenium	623	558	524	521	495	525
UBS Price Improvement Network	472	523	469	437	406	495

Regardless of duration, POSIT Alert and Pipeline exhibit block execution in excess of 20,000 shares per trade. In the first half hour, for example, the average execution size for POSIT Alert is 29,143 shares, while Pipeline exhibits executions of 27,140 shares. In these cases, the decline in execution size, as duration of the order is extended, is minimal[3]. POSIT follows, with execution sizes in line with its historical averages, ranging from about 7,000 shares in the first half hour and declining over time to roughly 3,000 shares as time passes. The continuous POSIT Now cross averages over 4,000 shares per execution in the first half hour, followed by a drop to about 2,800 shares and never falls below 2,000 shares as duration increases.

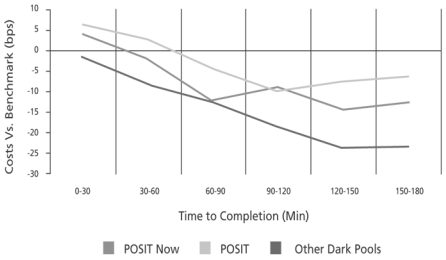
In stark contrast, the average execution sizes in other dark pools never exceed 650 shares, and range as low as 324 for longer duration. For example, POSIT Alert executions are roughly 60 times the size of UBS PIN executions in the first half hour, while POSIT periodic crossing is roughly 15 times the UBS average. While dark pool execution sizes exceed the roughly 240 share average in the open market, they do not do so by a wide margin.

The evidence clearly suggests that fragmentation of crossing liquidity neither helps in the sense of lowering transaction costs, nor does it increase the possibility of block executions. The extent to which the proliferation of dark pools, accessed through liquidity aggregators, improves market quality is open to question.

Slippage on the Highway

We made a conjecture in the introduction, that movement from one dark pool to another in the execution of a single order would engender information leakage. We obviously cannot measure information leakage explicitly. On the other hand, we can examine the extent to which this type of movement increases transaction costs as the time to complete an order increases. Our first results are contained in Figure 3.

Figure 3: POSIT, POSIT Now and Other Dark Pools Transaction Costs Vs. Time to Complete the Order



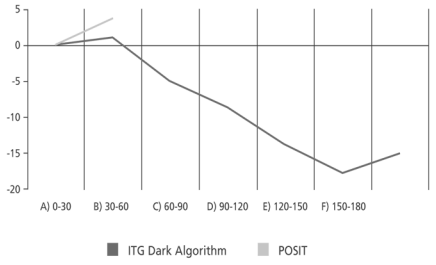
[3]The data for 2007 used here understates the current state of this form of block crossing. POSIT Alert has averaged 41,000 shares per execution over the first half of 2008, for example.

Figure 3 illustrates the growth in cost as duration increases from immediate execution to three hours. To simplify the presentation, we graph results for POSIT, POSIT Now, and an aggregate of the other dark pools in the sample. All orders examined in this figure are generated through the liquidity aggregator, and exclude direct access to POSIT from the buy-side desk, an important point for the results which follow.

Simple visual inspection generates an obvious conclusion: performance degrades as duration increases for all systems in the sample. POSIT, however, exhibits the least increase in cost as order duration grows, falling from an average gain relative to the benchmark in the first hour to only about 6 bps in cost at the 2.5 hour mark. The continuous POSIT Now cross also declines from a small gain in the first half hour to about 14 bps in cost over the same time interval. In contrast, however, the average performance of other dark pools falls from an average cost of around 2 bps in the first time interval to almost 25 bps if the order is around for as much as 2.5 hours.

Transaction costs increase as the order is shopped around dark pools by a liquidity aggregator, suggesting information leakage. There is an obvious question: if the order accesses a crossing system directly, and solely, as in the cul de sac metaphor of the introduction, are transaction costs lower than the liquidity aggregation alternative? We provide a limited answer in Figure 4.

Figure 4: ITG Dark Algorithm Vs. POSIT: Trading Costs By Time To Complete Order Benchmark = Sell-Bid / Buy-Ask (bps)



The order data for POSIT is now restricted to those orders that access the system directly. Otherwise, the style of presentation is the same as for the last figure[4]. The data for POSIT are truncated at one hour duration; orders that directly access the POSIT system do not rest there for more than an hour; in fact, the vast majority of the action is in the first half hour, representing one point-in-time match, as one would expect.

[4]In particular, the graph for the liquidity aggregator now includes orders sent to POSIT from the aggregator, accounting for the apparent difference in transaction costs over the first hour relative to Figure 3, in which POSIT orders were excluded from the aggregate execution results for non-ITG dark pools in the sample.

The POSIT orders are not sent around; rather, the residuals are returned or exposed to the continuous cross. Performance in terms of transaction costs is actually a gain relative to the benchmark, and no decline over time is observed, almost by definition of a periodic crossing mechanism. The liquidity aggregator exhibits increasing transaction costs as duration increases. These results reinforce the conclusion that a point-in-time cross, without a search, provides superior performance.

Summary

Detailed conclusions were presented in the introduction, but the overall message is quite clear: dark pool execution is beneficial, but the fragmentation of dark pool liquidity enabled through algorithmic trading has neither increased the ability to trade in large size nor reduced transaction costs relative to direct access to a periodic crossing mechanism.

This finding is reached by examining the characteristics of dark pool execution activity using a sample of approximately 12.6 million orders entered during 2007, including those of point-in-time matches, continuous crossing, and algorithmic liquidity aggregation. The data include information on ten dark pools, as well as complementary data from a large transaction cost data base, adding 8.2 million orders to the analysis. Our metrics include transaction costs and execution sizes, as well as information concerning the duration of orders in a liquidity aggregation setting.

We use the analogy of cul de sacs and highways to illustrate the possibility of information leakage through liquidity aggregation that touches multiple dark pools for a single order over time. Cul de sacs are dark; the highway from one to another has street lights. Traditional trading footprints may be seen on the highway, even if each cul de sac lacks a light. Information leakage itself is not strictly provable; rather, we observe a sharp increase in transaction costs for orders that spend any time on the highway, relative to direct access to a crossing system. Information leakage remains a plausible explanation, however, and there are a few possibilities. For example, within the world of transaction cost analysis, formulas often are used to aggregate trades into orders, when the explicit order size is not made available. The same techniques can be used to examine the tape in real time to infer trading interest. Thus, a multiplicity of prints from disparate venues is a source of information. Alternatively, and anecdotally, traders may be sending some part of the flow through the liquidity aggregator, simply to shop, and other pieces to alternative venues at the same time. Leakage possibilities abound in that scenario. Finally, 'gaming' in dark pool executions has proved to be an issue in the context of liquidity aggregators, to the point of producing explicit safeguards on the part of some firms[5]. Gaming is all about a search for information in settings that are otherwise dark.

There are few comparisons to make in terms of the results, largely because it is difficult to compile data sets of the size and granularity used here. George Sofianos and David Jeria find that the use of a dark pool in the context of VWAP strategies reduces execution shortfall by 12 percent, relative to order arrival price[6]. This result is consistent with our findings. Quantitative Services Group, in a study for NYFIX, finds that dark pool executions reduce market impact of trades by 62 percent,

[5]See, for example, Hitesh Mittal, "Are You Playing in a Toxic Dark Pool? A Guide to Preventing Information Leakage," *Journal of Trading*, volume 3, number 3, Summer 2008.
[6]George Sofianos and David Jeria, "Quantifying the SIGMA X Crossing Benefit," in Street Smart, Goldman Sachs, March 31, 2008.

compared to an execution composite representing an 'array of execution venues.[7] In their data, the average gain relative to the composite is 6.6 bps. In comparison, we find that continuous crossing of the type studied there reduces costs relative to a mix of execution strategies and venues by 8 bps, a reduction of 67 percent. These numbers are clearly consistent with the Quantitative Services Group study, and begin to provide a basis for judging dark pool execution quality in the future.

There remains much work to do in that respect. We expect, however, that the main conclusions of this paper will continue to be supported. Crossing systems are not created equal with respect to execution quality. Aggregation of crossing system liquidity through algorithms is not a panacea. Finally, there is real value to block liquidity.

If you would like more information, call ITG at 212.444.6300 or see www.itg.com

[7]Quantitative Services Group, "QSG Shines a Light on a Dark Pool," Research Note, June 2008.

PREPARED STATEMENT OF PETER DRISCOLL

CHAIRMAN, SECURITY TRADERS ASSOCIATION

OCTOBER 28, 2009

Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, thank you for the opportunity to testify at this important hearing on behalf of the Security Traders Association.

I am Peter J. Driscoll, a Vice President and Senior Equity Trader at the Northern Trust Company, Inc., in Chicago, Illinois, and the Chairman of the Security Traders Association (STA). I am here today representing the STA, a professional trade group that provides a forum for our traders, representing institutions, broker-dealers, ECNs, exchanges, market makers, and floor brokers to share their unique perspective on issues facing the securities markets. Our members work together to promote investor protection and efficient, liquid markets.

The financial services industry robustly competes for order flows today. Individual investors trade in markets that are characterized by narrow bid ask spreads, historically low commissions, immediate electronic execution of trades, and research provided without charge.

It is important, however, to realize that the vast majority of savings and investments are institutionalized, invested through savings plans at work, 401(k)s, pension plans, or mutual funds. Professional money management and diversification is critical for most investors who have neither the time and training or the resources to manage their own money. The institutions that work to identify investments for these funds are in reality representing the individual investors and working on their behalf. The aggregation of the interests of retail and institutional investors brings its own challenges. Like retail investors, institutional investors also value low commissions, tight bid ask spreads and competition for their order flow. The size of these aggregated orders also focuses their efforts on identifying pools of liquidity, be they exchanges or other trading venues that provide deep liquid markets where they can secure the best possible execution of these large orders on behalf of their shareholders.

The U.S. equity markets functioned extremely well during our recent economic crisis. The markets remained open, collectively trading billions of shares daily and priced equity securities efficiently according to the economic laws of supply and demand despite the dramatic financial news that was impacting the Nation. Throughout the declining markets, security prices were accurate and represented the equilibrium between buyers and sellers at the moment of execution. As most are aware there are times when there were more sellers than buyers and prices decline significantly. Though painful, this is a natural operation of the markets and our equity markets functioned exactly how they were designed to function. Because of this, our markets have been referred to as a national jewel and the envy of the world and they lived up to that billing every single day during the economic upheaval.

We commend the Subcommittee for taking a proactive approach to being an informed overseer of the markets. Your scrutiny is welcome and this debate is a healthy one. Open forums such as this are an important part of the regulatory process. Unfortunately, the topics before us today are technically complex and not well understood outside the industry itself. Additionally, the industry's flair for the dramatic has given these rather mundane mechanisms names like dark pools that carry a negative connotation. The market practices that we are examining today are not new; they have merely been transformed to be effective in the ever evolving electronic market structure. At the Security Traders Association, we characterize this evolution as natural growing pains that require industry debate to determine if regulatory attention is needed. It is my pleasure to be here on behalf of the STA, to be part of the informed debate by industry participants who understand trading processes and the potential ramifications any proposed regulations may have on our markets.

The Securities and Exchange Commission (SEC or Commission) announced that they will issue a concept release concentrating on the topics that we are addressing here today. The Commission also held an open meeting where they voted unanimously to issue proposals intended to strengthen regulation of dark pools of liquidity. These proposed rules were issued in the regular notice and comment rulemaking process affording all market participants the opportunity to comment on the rules and discuss their concerns about their effect on the markets. The STA feels that this process is the best way to uncover any unintended consequences that a proposed rule may have prior to it causing any serious disruption to the market.

Targeted regulation that ensures technology is used appropriately and that all participants have equal access to market data and trade execution is a mandate of

the regulators. Identifying manipulation is the appropriate priority of regulators. The Congressional Oversight panel in their January Special Report on Regulatory Reform said:

> The essential debate . . . [is a debate] between wise regulation and counterproductive regulation. "Wise regulation helps make markets more competitive and transparent, empowers consumers with effective disclosure to make rational decisions, effectively polices markets for force and fraud, and reduces systemic risk. Counterproductive regulation hampers competitive markets, creates moral hazard, stifles innovation, and diminishes the role of personal responsibility in our economy. It is also procyclical, passes on greater costs than benefits to consumers, and needlessly restricts personal freedom."

We believe that there is room for wise regulation targeted to the areas currently under review.

Dark or undisclosed liquidity has been part of the markets since their inception. In fact, many believe that the New York Stock Exchange was one of the largest dark pools in the markets. Floor brokers working large orders traditionally posted only small portions of the order in publicly displayed quotes. Dark liquidity is nothing new, though its use has grown.

Like dark liquidity, market making has always played a role in the equity markets. The participation of market makers has historically helped promote efficient pricing as they make orderly two-sided markets, stepping in to buy or sell a security when other market participants were unwilling to do so.

Concerns have arisen about how these two functions fit in the new electronic markets. Dark pools and electronic market making have largely replaced the old manual processes and have increased in popularity for several reasons. Decimalization of the markets in 2000 reduced the risk/reward scenario for market makers by reducing the potential spread capture, the traditional means for market maker remuneration, from 6.25 cents to a penny. They retained all of their obligations to the market, including providing continuous two sided markets and being the liquidity of last resort, but the rewards for these obligations were cut dramatically. Traditional market making became unprofitable and most market making firms reduced their market making activity or bowed out of the business altogether. For the institutions, decimalization meant smaller trade increments and institutions had to change the way they worked orders in the market. Anonymity is essential to prevent market players from capitalizing on the information about their large institutional orders.

Alternative Trading Systems

Private trading facilities began to attract institutional order flow and prosper because they provided the anonymity institutional traders desired and reduced the likelihood of information leakage. These new trading venues provided the institutions with a means of executing their orders without impacting the price of the stock significantly in this penny pricing environment. Private trading facilities would match orders within their systems using the current public quote to price the matches while depriving other market participants the opportunity to step ahead of their orders.

These private trading facilities are subject to Regulation Alternative Trading System (ATS), promulgated by the SEC to foster competition among exchanges and other liquidity pools. The rule has been tremendously successful in incubating new technology and fostering technological competition for the exchanges. Regulation ATS provides a registration and regulation regime for upstart businesses to enter the markets and compete with minimal regulatory hurdles.

While Regulation ATS has gone further than any other regulation in fulfilling a Congressional goal of the Securities Act Amendments of 1975 by making it practical for "investor's orders to be executed without the participation of a dealer," restricting access to certain dark pools and limiting reporting of quotes and transactional data appears to run contrary to another Congressional goal of those amendments. Namely, that "linking of all markets for qualified securities . . . will foster efficiency, enhance competition, increase information available to brokers, dealers and investors . . . and contribute to best execution of such orders." As such, the STA believes that it is appropriate for the Commission to evaluate dark pool access and transparency standards.

Trading and the pursuit of "best execution" involves strategy and the use of dark liquidity is one tactic in that strategy. Working an order in the dark allows the buy side trader to keep control of the order, keep the trading strategy confidential and limit the number of shares exposed to the price discovery process at one time. Limiting the size of the order exposed to the price discovery process allows the trader

to avoid overwhelming the supply/demand equilibrium and thus achieve better priced executions. A great majority of market professionals believe that dark pools, or alternative liquidity pools as the STA generally refers to them, increase efficiency by lowering execution costs and providing competitive choices in the execution process.

Some market participants believe that trading in dark pools degradates the price discovery process, the results of which alternative liquidity providers use to price orders. Traditionally, the large institutional orders have not been the driver of the price discovery process. It has been the small orders, fragments of the larger orders that interact to find the equilibrium price. While we understand the price discovery concerns and believe that at some point degradation may occur, we do not feel that with dark volumes trending around 10–15 percent of overall volume we are anywhere near that degradation point. As with most things in life moderation is a key. An efficient market structure can include alternative liquidity pools and public quoting venues coexisting. As long as we keep the appropriate level of order flow pumping through the price discovery process we should not see negative effects from this coexistence. In fact, recent statistics indicate that the overall level of alternative liquidity use has plateaued and individual pool gains now come at the expense of other alternative liquidity pools. In our 2008 Special Report we suggest that the Commission "should closely monitor the aggregate and individual volumes of alternative liquidity pools in order to ensure adequate price discovery." We stand by that recommendation today.

It has been suggested that trading in alternative liquidity venues disadvantages the ordinary retail investor. This is simply not factual. As we mentioned earlier the "average investor" invests through organized investment plans. These institutions use alternative liquidity providers to increase the efficiency with which portfolio decisions are implemented and reduce the costs associated with that implementation. If you consider the average retail investor who has a discount brokerage account and executes trades daily we would continue to point out that alternative pools of liquidity provide benefits to those participants. Prior to the advent of electronic trading and alternative liquidity pools small investors were concerned about trade certainty. Orders took several minutes to execute and the investor was at risk during those minutes. Electronic markets provide instantaneous executions, dark pools have provided the retail investor with the opportunity for price improvement as their orders flow through these alternative pools and the participation of high frequency traders assures that the size desired by the investor will be present when an execution consummates.

Assuring fair access to these alternative pools of liquidity and increasing their transparency are important goals. As individual dark pools gain market share and their volumes grow it will be important to allow other market participants to not only see the order flow through the quotes required once threshold levels have been achieved but also interact with that order flow. The STA does not believe that limiting the successful dark pools to *de minimis* percentages of volume is the appropriate answer. Regulation NMS was promulgated to promote the public display of limit orders, it drove more trading to dark venues. Trimming the quoting and access thresholds to unrealistically low levels could result in an explosion of new ATSs and further fragment the market. Once a pool sponsor has developed the logic for the dark pools matching engine, it may easily replicate it under a separate ATS filing. Structural speed bumps will not force the dark pool operators to push order flow to lit venues. There needs to be an incentive for order senders to prefer the lit venues over the alternative venues. Should the SEC through empirical evidence determine that too much volume is trading in dark pools or that there are too many dark pools, the standards that ATSs must adhere to should be upgraded and competitive pressures should be allowed to solve the problem. Increasing access and transparency is the answer, not arbitrarily limiting the amount of business that can be done by one alternate liquidity provider.

Dark pools should not be allowed to selectively share trading information. Once a pool decides to share information beyond what they provide to their members that information should be publicly distributed. This transparency must be increased without jeopardizing the pool participant's anonymity. Our members believe that a consistent reporting regime must be developed so that participants can make informed routing decisions. We further believe that pool operators must provide participants with detailed information about how their routing decisions are made and where the orders entrusted to them are executed. The STA also believes that post-trade transparency must be upgraded in such a way to allow other market participants to see which pools are attracting flows in which issues while preserving the anonymity of pool participants.

The STA has long held that similar products should be regulated by consistent rules. We understand that exchanges receive some benefits that ATSs do not. We are also aware that ATSs benefit from the displayed quotes produced by the exchanges. We do not believe that the offsetting of these benefits is disproportional enough to support the degree of regulatory bias favoring one market structure over the other. ATSs have changed the trading landscape. We believe that while it is always important to incent competitive behavior, the regulatory gap between ATS regulation and exchange regulation should be rationalized. Balancing the regulations will allow all venues to compete more robustly.

High Frequency Trading

The term "high frequency trading" is used to reference many different business models. For example, statistical arbitrage firms search for price disparities in the relationship between securities. They purchase the theoretically cheaper security and sell the more expensive one hoping to profit when prices regress to the mean. This type of arbitrage helps make markets more efficient and dampens volatility. Other high frequency traders hold themselves out as the new market makers. Market makers, as mentioned before, have traditionally had significant obligations to the markets and generally position risk for longer than milliseconds. Some question if market making is needed in the high volume millisecond trading environment that exists for primary tier stocks. We believe that there is a need for market making in secondary and tertiary issues, but not necessarily the primary tier stocks where data suggests most high frequency traders concentrate their activity. As competition enters the high frequency market making arena we would expect that trading profits would constrict forcing these market makers to begin making markets in lower tier stocks. Our members believe that high frequency traders provide liquidity and that their trading volumes help keep exchange fees low.

In the Special Report, "The STA's Perspective on U.S. Market Structure" that the STA issued in May of 2008 we expressed concerns about businesses being built solely to capture rebates from maker/taker models and market data plans. We remain concerned about the distortive effects these businesses could have on issues by generating quotes and trades without investment intent contributing to the flickering quote problem. STA suggested that the SEC adjust market data revenue allocation formulas to only reward "quality and tradable quotes and to discourage quotes that serve only commercial interests . . . ." We believe this remains good advice and look forward to working with the Commission to bring it about.

Sponsored Access

Sponsored access, the ability of an exchange member to provide access to a customer, must include appropriate trade risk management controls. Allowing "naked" sponsored access in today's interconnected markets is undesirable from both the industry and regulatory perspectives. One minor mistake in order entry could become a major problem across many different trading venues if trades are allowed to bypass risk management tools. Problems of this nature would put at risk many market participants and not just the participant who created the problem.

Colocation

Colocation is arrangement where a market participant can locate their server in the same location that houses the trading venue's matching engine. There is nothing inherently unfair in colocation as long as access is provided to all who desire it at a reasonable cost. Last week two major trading venues voluntarily accepted Commission oversight of their colocation plans. We feel that this is an extremely positive advancement in the regulation of colocation and that the Commission should monitor changes in these plans to ensure a level playing field.

Regulatory Resources

To adequately monitor and regulate the many issues we have discussed, we believe that the SEC needs the resources to upgrade their technology and hire more people to survail today's highly complex markets. Trying to monitor 35,000 registered entities with only 3,000 plus or minus staff members seems a daunting task. The already knowledgeable staff could also be bolstered through the addition of staff who are seasoned market professionals.

Conclusion

The Security Traders Association looks forward to working with market participants, governmental and self regulators, and the Congress on these technical market issues that have grown to be of national economic importance. We underscore the importance that any changes to the current regulatory framework need to be done in a deliberate and carefully considered manner, and if rules are adopted, to

use pilot programs whenever possible to ensure against the possibility of market disruptions. We also emphasize the need for the SEC and the Congress to avoid "picking winners and losers" and to allow competition and innovation to drive market changes whenever possible. Regulation should not protect inefficiencies that must ultimately be paid for by investors.

That concludes my remarks on behalf of the Security Traders Association. I thank you for the opportunity to participate in this important hearing today.

ATTACHMENT: THE SECURITY TRADERS ASSOCIATION

What We Are

Founded 75 years ago, the STA is an association of some 5,200 individual professional traders of equities and options, represented in and by 26 affiliates across North America. Our members represent all segments of the industry—the buy side, the sell side, exchanges, ECNs, and ATSs. They trade on behalf of investors of all types: individual, institutional, and professional.

Over the years, STA has contributed significantly and expertly to the legislative and regulatory discussion around market structure issues. Because our membership is drawn from all segments of the industry, the consensus views we develop, through our committee process, often render the best "prevetted" market structure solutions for investors, issuers, the industry, and our members. Our Committees provide a voice for: the sell side (Trading Issues Committee); the buy side (Institutional Committee); options traders (Options Committee); and compliance officers (Compliance Committee). Positions are recommended and voted on, and are then reviewed and approved by our Board of Governors.

We have issued eight position letters in 2009. In addition, we have produced two important White Papers: "Fulfilling the Promise of the National Market System—STA's Perspective on U.S. Market Structure" (2003); and "The STA Special Report—U.S. Market Structure 2008" (2008).

What We Believe

The U.S. equity markets have demonstrated the "modernization and strengthening" intended with the SEC's implementation of Regulation NMS in 2007. The National Market System is always an evolving "work in progress." As in the past, the current market structure issues are a result of explosive growth due primarily through technological and regulatory changes. Examination of today's issues is not only important, but also is appropriate and healthy.

We believe that a balance of competition and regulation yields superior results for all investors, issuers, markets, and the industry. We support the SEC as the appropriate regulator for our markets. In such a highly technical environment, the SEC has the understanding and procedures in place allowing for efficient regulation, consistent with goals mandated in the Securities Act Amendments of 1975. We encourage a pragmatic approach to ensure appropriate outcomes, based on empirical evidence and domain expertise.

Given the role of the SEC, we strongly support the maintenance of the Concept Release and notice and comment process as a critical component of effective rule making by allowing all interested parties to submit their views. This process allows a broad review by the SEC prior to issuance of a final rule. Escaping the "unintended" is a major benefit.

PREPARED STATEMENT OF ADAM C. SUSSMAN

DIRECTOR OF RESEARCH, TABB GROUP

OCTOBER 28, 2009

Dear Chairman and Committee Members, first, thank you for holding this hearing. The U.S. equity markets have long been a pinnacle of market efficiency and investor protection and critical to economy. However, to maintain our leadership we ought to examine our system in order to make sure it supports a wide range of investors.

During my career, the markets have undergone unprecedented regulatory and technological change. I entered the industry in 1998, designing retail order routing logic. In those days, executions would take minutes. When I left Ameritrade in 2004, executions were measured in seconds, and today they are measured in milliseconds.

Now, as Director of Research at TABB Group, a financial markets research and consulting firm, I am part of an organization dedicated to helping market professionals understand the trading landscape. Our clients span the professional investment community from pension plans, mutual funds, hedge funds, high frequency

firms, and brokers, to Exchanges and ATSs. Our studies put us in constant dialogue with head traders of our Nation's top money management firms. Indeed, a forthcoming piece of research, based on conversations with head traders at firms that manage 41 percent of U.S. institutional assets, is on the topic we are here to discuss.

For institutional money managers, trading is a balance between price and time. If order information is not handled carefully execution quality can deteriorate, which would harm pensioners, retirees, and investors. Time-sensitive orders tend to be widely disseminated in order to increase the speed of execution, while price-sensitive orders stay dark to minimize impact on the stock. The tradeoff between dark and lit is never black and white as instructions differ, liquidity patterns are not consistent, and market conditions change.

While dark pools are new, underlying trading principles have not changed since the Buttonwood tree. Large orders influence the market and will never be fully unveiled. As trading has evolved to rely on automated tools to facilitate decision making and execution, we need to ask, "What tools should investors have to control the dissemination of trading information?" In the past, traders gave large price-sensitive orders to NYSE Floor Brokers. Now traders have the ability to codify the execution decision and more closely manage how that order interacts with the market. The complex mechanisms of today's market reflect the competition to provide traders with state-of-the art tools.

TABB Group's concern about dark pools is ensuring that traders who utilize these pools adequately understand their execution process. We have seen much progress on this front. This year, 71 percent of traders we interviewed were comfortable with dark pool practices, up from 53 percent in 2008. The increased voluntary disclosure by dark pools is a positive step. TABB Group believes that there should be even greater dark pool order handling disclosure so traders can be sure their intentions are properly fulfilled. While we believe in disclosure, we do not necessarily believe in pretrade or real-time post-trade dark pool transparency, especially for small or midcap stocks. The dissemination of this information in real time can harm execution and force liquidity into other more manual dark forms. In this situation, end of day disclosure is more desirable.

Opposite dark liquidity is high frequency trading (HFT). Markets require intermediaries to provide liquidity. In the past they were called specialists or market makers, while today we call them high frequency traders. Little has changed in providing liquidity except speed. HFT is merely an outgrowth of the regulatory and technological progress reflecting the cost of immediate liquidity. Among the institutional investors we spoke with 83 percent feel HFT has either a positive or neutral impact. Those that believe HFT has a positive influence on the markets cited the added liquidity and tighter spreads as key benefits. Those that are neutral believe the responsibility of execution quality rests on their shoulders. The 17 percent that believe HFT has a negative influence on the market feel as if HFT profits represent an unnecessary liquidity tax on their investors.

Finally, it is important to make the important distinction between flash orders and high frequency. Flash orders at their height represented only 3 percent of overall share volume. With BATS and NASDAQ discontinuing the process, flash represents a small and decreasing fraction of overall equity market volume. Flash orders are another tool used to balance price and time—trading off information for a better price or more volume. Flash has existed for years on the NYSE Floor and on the market maker's desk, albeit manually. For flash trading, TABB Group believes disclosure is paramount and the ability to opt-out a must.

Trading is both an art and a science. To effectively balance the price/time tradeoff, traders need a variety of tools. When we want to tread lightly, we trade in the dark. When immediacy is virtue, we take liquidity from wherever we can. As our markets evolve, so must our tools. No one idea trumps all others and a single market does not serve all. It is this competition among and within these different investment philosophies, trading strategies, and market structures that creates a more efficient marketplace for all market participants.

With that, I would like to thank this Committee for its time.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR MENENDEZ FROM JAMES BRIGAGLIANO

Q.1. Does integrating dark liquidity with displayed markets improve execution quality for retail investors?

A.1. In general, vigorous competition among trading centers to attract and execute retail investor orders is likely to improve the execution quality of those orders. In the current U.S. equity market structure, most marketable orders of retail investors (either market orders or limit orders with prices that make them immediately executable at the current best-priced quotations) are routed to OTC market makers—a type of dark liquidity. OTC market makers generally execute small marketable orders of retail investors at the best displayed prices or better. The nonmarketable orders of retail investors typically are routed to displayed markets (such as exchanges and electronic communications networks (ECNs)) that will display the orders in the consolidated quotation data that is widely distributed to the public.

Some displayed markets have attempted to integrate displayed and undisplayed liquidity by using "flash" orders. Flash orders are marketable orders that a displayed trading center cannot execute immediately at the best displayed prices. Rather than routing them to execute against the best displayed prices, the trading center "flashes" the orders for a short period (usually less than a second) to its market participants in an effort to attract dark liquidity to execute the order. As discussed in the recent Commission proposal to eliminate a rule exception for flash orders (Securities Exchange Act Release No. 60684, 74 FR 48632 (Sept. 23, 2009)), while flash orders may offer certain benefits, such as reduced trading fees, they could disadvantage investors if their orders do not receive an execution in the flash process and market prices move away from the orders. In addition, use of flash order could create two-tiered access to information about market liquidity as well as discourage others to display their best quotes thereby potentially widening spreads for all investors. The comment period for the flash order proposal recently ended. The Commission is reviewing the comments and will determine whether and how to proceed with the proposal.

Q.2. What is the danger that SEC proposed rules will force dark pools to interact less with the displayed market?

A.2. If the Commission were to adopt its flash order proposal discussed above, flash orders could not be used by displayed markets to access dark liquidity. This proposal would not, however, prohibit displayed markets from routing orders to dark pools. The use of dark liquidity in all its forms is an issue that the Commission may consider as part of a concept release or similar document.

The Commission has also published a proposal to address the use of actionable indications-of-interest, or "IOIs," by dark pools (Securities Exchange Act Release No. 60997, 74 FR 61208 (Nov. 23, 2009)). These actionable IOIs sometimes are sent to displayed markets in an attempt to attract order flow. Actionable IOIs are not, however, included in the consolidated quotation data that is widely distributed to the public. As discussed in the Commission's proposal, the use of actionable IOIs potentially can create private mar-

kets and two-tiered access to information about the best displayed prices. The comment period for the Commission's proposal ends on February 22, 2010. At that time, the Commission will consider the comments and determine whether and how to proceed with the proposal.

Q.3. Many concerns have been raised respecting fragmentation of the markets, what are the positives?

A.3. Fragmentation can occur when many different trading centers compete to attract order flow, and order flow is dispersed widely among those trading centers. Vigorous competition among trading centers for order flow can have many benefits. These include the tailoring of trading services to meet the needs of different types of market participants, innovation in the design of trading services, and pressure to keep trading fees low.

Section 11A of the Exchange Act directs the Commission to facilitate the establishment of a national market system that achieves fair competition among trading centers, but also other objectives, such as efficiency, best execution of investor orders, and the offsetting of investor orders. Fragmentation can interfere with these other objectives. Linkages among trading centers are the primary means to balance the goals of competition among trading centers with the other national market system objectives. Whether the linkages in the current equity market structure are sufficient to achieve the benefits of competition among trading centers while minimize the potential harms of fragmentation is an issue that is part of the Commission's ongoing review of market structure.

Q.4. Retail investors have different needs from firms who engage in short term trading, how do we incorporate these different needs in a manner that maximizes benefits for all?

A.4. The Commission repeatedly has emphasized the importance of long-term investors, including retail investors, when addressing market structure issues. The interests of long-term investors and short-term professional traders often coincide, but when they do not, the Commission has stated that its clear responsibility is to uphold the interests of long-term investors.

A good market structure should create a framework in which competitive forces work for the benefit of long-term investors. As noted above, for example, retail investors benefit when there is strong competition among trading centers to attract and execute their orders. The marketable orders of retail investors generally are executed at prices that reference the best displayed prices. When short-term traders compete to provide liquidity at the best prices, this competition can narrow quoted spreads and thereby directly benefit retail investors by improving the prices at which their orders are executed.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR VITTER FROM JAMES BRIGAGLIANO

Q.1. At an open meeting on October 21, 2009, the Securities and Exchange Commission (the "Commission" or "SEC") voted to publish for public comment three proposals that would significantly tighten the Commission's regulation of so-called "dark pools." Given

that and your participation in today's hearing clearly the issue is very much on your radar screen. Can you please lay out a little more clearly the pros and cons of dark pools and flash orders? How do you weigh the liquidity and pricing function that they provide institutional investors with a need to ensure all market participants have equal access to information and pricing?

A.1. The potential cons of dark pool orders (particularly the actionable indications of interest, or "IOIs", that are the focus of the dark pool proposals) and flash orders are: (1) they may create a two-tiered market in which the public does not have access, through the consolidated market data that is widely available to the public, to information about the best available prices for listed securities; (2) they may discourage the public display of trading interest and harm quote competition among markets, which could lead to wider spreads and higher transaction costs for investors; (3) they may divert a significant amount of valuable order flow from the markets that publicly display the best prices and thereby detract the quality of public price discovery in listed securities (such as reduced depth or increased volatility); (4) if not used appropriately, they can cause information leakage about the dark pool or flash order that can harm the interests of the submitter of the order; and (5) the flashing of orders at marketable prices may undermine the purposes of the rules which protect previously displayed quotations from being locked by equal-priced contra-side quotations.

The potential pros of dark pool orders and flash orders are: (1) the dark pool or flash mechanism may attract additional liquidity from market participants who are not willing to display their trading interest publicly and thereby improve execution quality for the dark pool or flashed order than if it were routed elsewhere; (2) a reduced or no fee for executing the dark pool order or flashed order than the fee that would have been charged (known an access fee or "take" fee) if the order were routed elsewhere; and (3) an ability for institutional investors or brokers representing the interests of institutional investors to trade without revealing their large trading interest to the public and thereby to lower the transaction costs of institutional investors.

A vital step in weighing the pros and cons of dark pool orders and flash orders, including the liquidity and pricing function and equal access to information and pricing, is publishing the proposals and receiving the benefit of public comment on the issues. The comment period on the flash order proposal ended on November 23, 2009. The comment period on the dark pool proposals ends February 22, 2010. The Commission likely will want to assess the potentially serious drawbacks associated with dark pool orders and flash orders, including the danger of creating a two-tiered market, when considering any benefits for long-term investors, such as quality of execution, that may be provided. The Commission also likely will want to consider whether such benefits are otherwise obtainable.

RESPONSES TO WRITTEN QUESTIONS OF SENATOR BUNNING FROM PETER DRISCOLL

Q.1. Mr. Driscoll, you suggested in your written statement that market makers, especially high frequency traders claiming to be market makers, aren't really making markets where it is needed and are concentrating on the highest volume stocks. What should the SEC or market participants do to fix this?

A.1. Market makers have always been (and continue to be) a critical part of the U.S. capital markets. Day in and day out, they provide billions of dollars of much needed liquidity to the market, which enhances price discovery, transparency and execution quality. Most traditional market makers provide continuous two-sided markets and a wide spectrum of specialty services in thousands of issues. Without these services, capital markets would have dramatically wider bid-ask spreads, volatility would increase and execution quality would quickly deteriorate, especially in secondary and tertiary issues where the lack of liquidity has traditionally been a problem.

Market makers have adapted technologies to make their market-making operations more efficient. These technologies help manage risks, execute orders quickly and enable the market maker to remain competitive in the new electronic trading structure. This investment in high-speed technology benefits the market maker, their clients and the markets in general—a case where competition and innovation directly benefit investors.

It is essential to our members that we and the regulators continue to evaluate and assess the benefits of competition from new market making entrants to ensure that the benefits to the investor are both quantifiable and tangible.

ADDITIONAL MATERIAL SUPPLIED FOR THE RECORD

PREPARED STATEMENT OF LARRY LEIBOWITZ

GROUP EXECUTIVE VICE PRESIDENT AND HEAD OF U.S. EXECUTION AND GLOBAL TECHNOLOGY FOR NYSE EURONEXT

Introduction

Chairman Reed, Ranking Member Bunning, and Members of the Subcommittee, my name is Larry Leibowitz, and I am Group Executive Vice President and Head of U.S. Execution and Global Technology for NYSE Euronext. I greatly appreciate the opportunity to share with the Committee our written testimony on the subject of today's hearing. We are grateful for the Committee's leadership in addressing the market structures issues that are the focus of so much debate in today's evolving marketplace.

This is a timely subject worth examining for several reasons. SEC Chairman Schapiro has announced that the Commission is undertaking a broad review of market structure issues; and, in fact, has already made several proposals, all steps in the right direction. These issues are important in the context of both the financial regulatory reforms the Committee is considering and the advances in market practices and technology that have become the focus of the public, regulators, legislators, market participants, analysts, and commentators.

NYSE Euronext is a leading global operator of financial markets and provider of innovative trading technologies. The company operates cash equities exchanges in five countries and derivatives exchanges in Europe and the United States, on which investors trade equities, futures, options, and fixed-income and exchange-traded products. With more than 8,000 listed issues, NYSE Euronext's equities markets—the New York Stock Exchange, NYSE Euronext, NYSE Amex, NYSE Alternext, and NYSE Arca—represent nearly 40 percent of the world's equities trading, the most liquidity of any global exchange group. NYSE Euronext also operates NYSE Liffe, the leading European derivatives business, and NYSE Liffe U.S., a new U.S. futures exchange. We also provide technology to more than a dozen cash and derivatives exchanges throughout the world. The company also offers comprehensive commercial technology, connectivity and market data products and services through NYSE Technologies.

Regulation is an integral and important part of the NYSE Euronext business structure. It is our belief that smart regulation—when properly administered—adds value to the marketplace overall, as well as to our business model. The current attention by this Committee, the SEC, and policymakers and commentators to the questions of how to update market structure regulation to address today's marketplace is timely and of utmost significance to our own business as well as the marketplace as a whole.

Specifically, today I would like to address:

- the evolution of the equity markets since the adoption of Regulations ATS and NMS in 1998 and 2005, respectively;
- the SEC's dark pool proposals;
- the SEC's proposal to eliminate "flash" orders;
- high frequency trading;
- colocation; and
- direct market access.

In each case, I would like to identify what we view as the principal issues and ideal solutions.

Evolution of the Equity Markets

In 1998, the SEC adopted Regulation ATS and Rule 3b-16, which allowed new electronic trading markets to operate as exempt "alternative trading systems" instead of complying with the extensive regulatory requirements borne by registered exchanges. Although electronic trading systems were exchanges in all but name, prior to Regulation ATS they were regulated not as exchanges but solely as broker-dealers, with some additional reporting requirements. The SEC's purpose in adopting Regulation ATS was to encourage "innovative new markets" while providing "an opportunity for registered exchanges to better compete with alternative trading systems," by reducing the regulatory disparities that existed at the time between regulated exchanges and automated trading centers,[1] Regulation ATS sought to achieve

[1] Regulation ATS Adopting Release, Exchange Act Release No. 40760 (December 22, 1998).

these purposes by exempting alternative trading systems from exchange registration subject to conditions that imposed some but not all of the core obligations of exchange regulation on those ATSs, and only when an ATS reached a significant market-share threshold. These conditions include disseminating public quotes, providing fair access, maintaining reliable and secure systems, and ensuring the confidentiality of orders. Under the regulations in effect today, quoting and fair access obligations are triggered when a particular ATS crosses a fairly high threshold in volume in a particular security. Taking a step in the right direction, the SEC has recently proposed lowering the threshold that triggers the obligation to publicly display quotes from 5 percent to .25 percent. We believe the SEC should review whether the fair access threshold should also be lowered.

Regulation ATS facilitated the development of numerous nontransparent trading systems (informally known as "dark pools") and transparent electronic communication networks, or ECNs, that disseminate public quotes. Prior to the adoption of Regulation ATS, the U.S. equity markets were primarily characterized by trading on transparent floor-based exchanges, with some blocks trading upstairs on broker-dealer block desks, and some retail orders executed internally by over-the-counter market makers. Regulation ATS fostered new competition from electronic trading markets, some bright, some dark. The competition presented by these new trading centers has changed the operations of exchanges, upstairs block desks, and over-the-counter market makers. For example, transaction volume that occurs off of regulated, transparent exchanges now routinely exceeds one-third of total market volume. This shift demonstrates the growth of highly competitive markets, but itself suggests that we are at a point where a reexamination of our market structure is warranted.

Today we have the opportunity to step back and consider how to ensure that the regulatory framework keeps pace with the changes that Regulation ATS fostered. Before the adoption of Regulation ATS, the SEC rightly identified the need to bring parity to the regulatory treatment of registered exchanges and ATSs. Although the SEC's actions facilitated significant innovation and lower costs for investors as a result of the competition among the various market centers, it is important that policymakers continue to evaluate the marketplace and the effects of regulatory reforms to assure that they are achieving objectives that make sense in today's market and have not exposed the marketplace to regulatory arbitrage among participants. We must reexamine whether the SEC achieved its parity objective with the implementation of Regulations ATS and NMS and whether market practices and technology have outgrown the original designs of Regulations ATS and NMS. In particular:

- ATSs that are under the 5 percent volume threshold that triggers the public quoting requirement are able to quote privately, using prices that are based on the public quote that is formed for the most part by registered exchanges. There is a cost to creating the public quote, and private ATSs are not contributing to that cost by contributing their quotes. As off-exchange transaction volume grows, there is a greater risk that this pattern could harm the effectiveness and the integrity of the public quote. The recent proposals by the SEC to address this issue, as well as their anticipated concept release, are important steps in the right direction.
- As trading spreads across more bright and dark markets, it becomes increasingly difficult to monitor, both for practical data aggregation reasons and because the task of monitoring trading is spread differently across self-regulatory organizations, without any one SRO seeing the majority of trading. At a minimum, the cost of surveillance of the equity markets should be spread across all trading centers and should be fairly and proportionately borne by each marketplace, whether an SRO or not. ATSs do not bear direct surveillance obligations as exchanges are required to do, and do not contribute directly to the costs of market surveillance conducted by other SROs. We should look to create a more equitable and consolidated approach to marketplace surveillance.
- Registered exchanges are subject to an extensive registration process to ensure that their trading systems comply with national market system principles and that they are structured and funded to operate effectively as self regulatory organizations. Exchanges also must submit their rule changes for prior SEC approval. It is important to recognize that this rule review by the SEC is not a quick rubber stamp process: many of the strongly held market structure principles of the SEC are not expressed through notice and comment rulemaking, but through the conditions and limitations the SEC imposes on exchange rules through the approval process. This process often is very time consuming. ATSs are not subject to similar oversight, because they do not need to seek approval

to operate or file their rules for approval. As a result, ATSs are able to modify their rules and respond to user feedback quicker than registered exchanges, and they are not subject to the SEC's behind-the-scenes application of market structure principles. ATSs should be subject to SEC approval before becoming registered, and prior SEC review and, where appropriate, approval of their material system changes.

- And, most fundamentally, there is the question of whether trading centers that account for a substantial percentage of all trading volume should be permitted to benefit from any exemption from fair access and quoting obligations, at least with respect to small-sized orders.

The regulation of ATSs requires additional changes to achieve the Regulation ATS objectives. Not just the ATS threshold for public quoting, but the ATS threshold for fair access should be lowered below 5 percent. In fact, to lower the quoting threshold but not the fair access threshold is counterintuitive: it is like requiring a department store to advertise its sale prices but allowing the guards at the door to deny entry to all but the most privileged customers.

Other jurisdictions are undertaking similar reviews. For example, Charlie McCreevy, EU Commissioner for Internal Market and Services, has stated that the European Markets in Financial Instruments Directive (MiFID), the EU's analogue to Regulation NMS, needs to be reexamined in light of the rise of dark trading venues, which he said "gives rise to questions as to whether there are unfair commercial advantages for the operators of these venues and whether the trend undermines price discovery, market integrity and efficiency for the market as a whole."[2]

The SEC's Dark Pool Proposals

In 2005, the SEC adopted Regulation NMS, with the goal of establishing a truly integrated national market system. Since then, the rise of dark trading venues has contributed to fragmentation, undermining the goals of Regulation NMS. Requiring ATSs to publicly display quotes and treating actionable indications of interests as firm quotes under Regulations NMS and ATS would help forestall further fragmentation by integrating many ATSs into the national market system of displayed quotes.

Last week, the SEC proposed several rule amendments to address some of these issues. The SEC's proposals would (1) amend the definition of "bid" or "offer " in Regulation NMS to require actionable indications of interest to be included in the public quote stream; (2) lower the volume thresholds that triggers the quote display obligations of ATSs from 5 percent to 0.25 percent; and (3) require trades reported by an ATS to identify the ATS on which the trade took place (today the trades are reported generically as having been executed "over-the-counter"). These proposals represent a useful and productive first step.

Moving forward, it is important to address the additional market structure issues that I mentioned earlier: flash orders, high frequency trading, colocation, and direct market access. We understand that the Commission plans to publish a concept release exploring these topics, and in particular whether high frequency traders are contributing to liquidity in the displayed markets, whether long-term traders have shifted into dark markets, and whether these changes have resulted in greater volatility in the displayed and dark markets overall, to the detriment of long-term investors. While, as described below, we do not believe that high frequency trading and colocation in particular raise these concerns, other issues like flash orders are more problematic. We welcome the SEC's review of this area.

Flash Orders

The rapid growth and widespread use of flash orders in part demonstrates how the regulatory framework has not kept pace with the evolution of the market. In this regard, the SEC should be commended for its recent proposal to eliminate flash orders. We agree with the SEC that flash orders undermine public price discovery and the efficient functioning of the markets by drawing liquidity away from the displayed markets and by allowing unsurveilled information leakage. In addition, flash orders represent a form of "unfair access" because a flash order is only available to a select group of market participants, thus the broader market is disadvantaged because a displayed order was not given the opportunity to execute against the order that was flashed to a select group. This undermines the incentive to display limit orders, which play an essential role in the public price discovery process by

[2] Speech by Charles McCreevy, "Towards an Integrated Approach to Regulation Across the EU" (September 18, 2009), available at, *http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/09/398&format=HTML&aged=0&language=EN&guiLanguage=en.*

establishing outer limits as the market price moves. Flash orders also create a two-tiered market as they allow select participants to have advance access to order information in a given security. And flash orders create the opportunity for a recipient of the "flash" to trade on the public markets utilizing the information that the "flash" revealed about the price movement in a security, with no surveillance oversight of recipients of the information.

Flash orders are an example of an innovation that if left unchecked would harm the markets and the integrity of public price discovery and create advantaged groups. On the other hand, there are innovations in technology and market practice that benefit the broader market. One example of a beneficial innovation is high frequency trading.

High Frequency Trading

High frequency trading is a natural evolution of longstanding practices of active market participants and traditional market makers. A variety of firms engage in high frequency trading, including firms that have evolved from more traditional market making models. High frequency trading firms engage in various trading strategies, but generally operate by entering orders on a highly automated and high-volume basis, based upon proprietary algorithms. Many orders are entered seeking rapid execution at their limit price and are cancelled immediately if not executed instantaneously.

High frequency traders represent a significant portion of trading volume on the NYSE and other U.S. market centers. For example, it is estimated that high frequency traders accounted for approximately two-thirds of all volume on U.S. equity markets over the last nine to 12 months.[3] High frequency trading should not be confused with flash orders. In fact, one analysis has suggested that almost all high frequency trading takes place outside of the flash process.[4] High frequency traders provide substantial liquidity to the market, a positive development that should be encouraged. We believe that absent the liquidity provided by high frequency trading, the volatility in the equity markets would be much greater. In addition to providing liquidity, high frequency trading firms contribute to the narrowing of spreads, resulting in lower transaction costs for all market participants.

High frequency traders invest in systems and trading algorithms that enable them to respond quickly to price changes by entering and canceling many orders at a time. As a result, high frequency traders trade at higher speeds and in greater volume than many other investors. But it is worth recalling that differences in speed and volume have always existed, and are harmful to investors only if they are on balance taking liquidity that would otherwise be available to other investors, or are manipulating the market in some manner. We have not observed either of these concerns.

Colocation

Colocation is the practice of trading firms locating their servers at the physical location of a trading center's matching engine servers. In today's electronic trading environment, orders travel extremely quickly, so the physical proximity of a trading firm's server to the market affects execution speed (at a rate of approximately 1 millisecond per 100 miles). This puts a firm located in, for example, San Francisco at a significant speed disadvantage to one in New York. In fact, a lack of available colocation facilities could trigger a scramble for real estate located next to market centers on behalf of parties that are outside the regulatory reach of the SEC or exchanges. The practice of colocation has been commonplace in both the equities and derivatives markets, and is the logical result of the automation of the U.S. marketplace. As U.S. market structure has evolved (due to Regulation ATS, Regulation NMS and other factors driving electronic automation and fragmentation), aspects of trading technology infrastructure (especially colocation) have started to commingle with the market structure itself.

We do not believe that retail investors are disadvantaged by colocation. In fact, most retail orders do not enter the market directly, but rather through wholesalers, who instantaneously fill orders out of inventory at prices determined by the National Best Bid or Offer (NBBO), or place orders on exchanges using their own colocated infrastructure. Retail investors thus benefit from the utilization of colocation through tighter spreads, lower volatility and deeper liquidity.

Colocation provides operational, not informational advantages. There have always been operational differentials in the marketplace, as a result of technological inno-

[3] *See,* "Rosenblatt Securities Inc., Trading Talk: An In-Depth Look at High-Frequency Trading" (September 30, 2009).

[4] *See, id.*

vation and the extent to which participants choose to compete by spending resources on those innovations. Computers reading price feeds and making decisions have always been faster than people in their broker's office reading a ticker screen. As technology has become more prominent in the market, this operational differential has become most easily measured by speed.

While operational advantages are a natural result of a competitive, free market, informational advantages are not—they distort price discovery and unfairly disadvantage other market participants. An informational advantage exists when a market participant has prior access to information that others do not have, as in the case of flash orders. Colocation does NOT in itself allow a participant to see orders before they hit the marketplace, as flash orders do.

The SEC is presently reviewing the way fees are structured for exchange-owned/controlled colocation space and will require that such colocation fees be filed as is required for any other exchange pricing. The SEC has oversight over the exchange markets that offer colocation, but not colocation offered by ATSs or other third parties who do not operate marketplaces. We think it is important that the SEC consider ways in which to fairly regulate the practice of colocation across marketplaces, regardless of how colocation to a particular marketplace is offered.

It is also particularly important to ensure fair access in connection with colocation in order to prevent both anticompetitive results for regulated exchanges and gaps in oversight regarding colocation by third parties, such as landlords of premises where market centers lease space to host their matching engines. It is impossible to prevent third parties from obtaining space close to an exchange data center and then subletting it to trading firms. Third party data center operators—acting on their own or on behalf of market centers (some of which are regulated and some of which are not)—are under no obligation currently to ensure fair access. As a result, not all markets are regulated equally, which creates competitive disadvantages among marketplaces offering colocation and creates an opportunity for market participants to engage in regulatory arbitrage. In addition, not all markets offer colocation in the same manner (*e.g.,* the NYSE will own our U.S. equities colocation space and control the entire data center housing the matching engines for our European derivatives exchanges, subjecting us more directly to regulation, but our competitors might provide it via third parties, taking it out of the realm of regulation simply by virtue of the structuring of their real estate arrangements). This could result in an extremely tilted playing field that allows market participants that are significant contributors to overall activity and volume to avoid SEC regulation.

We are working with the SEC to develop best practices for allocation of colocation space. We welcome the SEC guidelines in this area. We encourage the SEC to develop effective mechanisms for monitoring the practice among ATSs and third party vendors as well.

Sponsored Access

Firms that colocate at market centers often connect to the market center though a direct market access arrangement. Direct market access refers to the practice for trading firms that are usually not themselves members of a particular trading venue obtaining access to a market center through a broker-dealer's trading identifier, thereby allowing such trading firm to enter orders directly onto the market center's systems. Direct market access takes at least two forms, including: arrangements whereby a member of a market center permits a sponsored participant to (1) enter orders directly onto the market without first passing through the member's systems (including risk management systems), sometimes referred to as "unfiltered" or "naked" access, or (2) enter orders directly onto the market through the member's systems (including risk management systems).

We support the SEC's initiative to develop clear, consistent supervisory standards for sponsoring firms in order to ensure that there are adequate risk controls in place to minimize systemic risk as a result of inadequate oversight of trading activity; we also support FINRA's efforts to monitor the sponsoring firms' risk management procedures—a role that properly belongs with a regulatory agency capable of examining across the industry in a consistent manner instead of in the hands of discrete exchanges with varying examination methodologies and processes.

Conclusion

In conclusion, NYSE Euronext supports leveling the playing field between ATSs and registered exchanges by (1) requiring ATSs that cross a more realistic threshold in volume to be required to quote publicly, as the SEC has recently proposed; (2) reducing the Regulation ATS fair access threshold in parallel with the quoting threshold; (3) requiring ATSs to contribute to their proportional cost of market surveillance and for there to be a universal surveillance authority; and (4) requiring

ATS rule changes to be subject to regulatory oversight and approval similar to the oversight and approval process that applies to registered exchanges. In addition we advocate:

- eliminating flash orders, as the SEC has recently proposed;[5]
- encouraging high frequency traders to continue to play the market stabilizing role that was demonstrated during the market stresses experienced last year;
- ensuring that there is no regulatory disparity between market centers that offer colocation opportunities in owned data centers and nonexchange third-party data centers that offer colocation opportunities; and
- requiring providers of direct market access to perform pretrade monitoring of the trading activities of sponsored participants in accordance with a uniform rule.

We believe that the SEC is working on these difficult and complicated issues. We support the Committee's continuing efforts in focusing on this area, and would like to thank you once again for the opportunity to share our views today.

PREPARED STATEMENT OF THOMAS M. JOYCE

CHAIRMAN AND CHIEF EXECUTIVE OFFICER, KNIGHT CAPITAL GROUP, INC.

Chairman Reed, Ranking Member Bunning, and Members of the Committee thank you for the opportunity to submit written testimony in connection with this very important hearing regarding key market structure issues; including dark pools, flash orders, and high frequency trading (HFT).

1. Brief history of Knight

Knight Capital Group, Inc. (Knight) opened for business in 1995.[1] Built on the idea that the self-directed retail investor would desire a better, faster and more reliable way to access the market, Knight began offering execution services to discount brokers. Today, Knight services some of the world's largest institutions and financial services firms, providing superior trade executions in a cost effective way for a wide spectrum of clients in multiple asset classes, including: equities (domestic and foreign securities), fixed income securities, derivatives, and currencies. Today, Knight through its affiliates, makes markets in equity securities listed on the New York Stock Exchange (NYSE), NASDAQ, NYSE Amex, the OTC Bulletin Board, and Pink Sheets. On active days, Knight executes in excess of five million trades with volume exceeding 10 billion shares. In 2008, Knight:

- Made markets in (or traded) more than 19,000 securities.
- Executed nearly one trillion shares (roughly, 4 billion per day)—more than any other broker/dealer or U.S. securities exchange.
- Executed more than 640 million equity trades (approximately 2.5 million per day).
- Traded more than $4.8 trillion in notional value (over $19 billion per day).

The majority of the trades we execute today are on behalf of retail investors. Although retail customers do not come to us directly, their brokers do. We count amongst our clients some of the largest retail brokerage firms in the U.S., including: Scottrade, TD Ameritrade, Fidelity, Raymond James, E*Trade, Pershing, Wachovia and Wells Fargo. In addition, we service some of the largest institutions in the country. These institutional clients send us orders on behalf of mutual funds and pension plans, whose ultimate clients are, of course, small investors.

Knight has spent the last 15 years building its technology infrastructure so that it can process millions of trades a day on behalf of the retail investor—in a fast, reliable, cost effective manner, while providing superior execution quality and service. Our data centers are some of the largest and most reliable in the industry. We

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[5] NYSE Euronext will be submitting a comment letter on the Commission's proposal.

[1] Knight is the parent company of Knight Equity Markets, L.P., Knight Capital Markets LLC, Knight Direct LLC, Knight BondPoint, Inc., and Knight Libertas LLC all of whom are registered with SEC and various self-regulatory organizations. Knight Capital Europe Limited and Hotspot Fxi Europe Limited are authorized and regulated by the Financial Services Authority. Knight Equity Markets Hong Kong Limited is authorized and regulated by the Securities and Futures Commission. Knight, through its affiliates, is a major liquidity center for the U.S. securities markets. We trade nearly all equity securities. Knight's clients include more than 3,000 broker-dealers and institutional clients. Currently, Knight employs more than 1,000 people worldwide. For more information, please visit: *www.knight.com*.

spend tens of millions of dollars every year, making our technology platform better, faster and more reliable. Today, we have the capacity to process nearly 20 million trades per day. We have connectivity to nearly every source of liquidity in the equities market, and our trade response times are now measured in milliseconds. Our years of research and development, technology platform enhancements, and connectivity to liquidity wherever it resides is all brought to bear with a single purpose in mind: securing best execution on behalf of our customers (and, in turn, their customer—the retail investor). Importantly, access to this sophisticated gateway is available to nearly every investor in the country.

As a result, we believe that Knight is uniquely qualified to comment on these market structure issues. At their core, these issues revolve around notions of fair access and transparency—both of which form the foundation for our capital markets. As you will undoubtedly see upon the careful analysis of all of the relevant data, investors' level of access to the markets is extraordinary and the level of transparency in today's markets is better than it has ever been.

2. There has never been a better time to be an investor

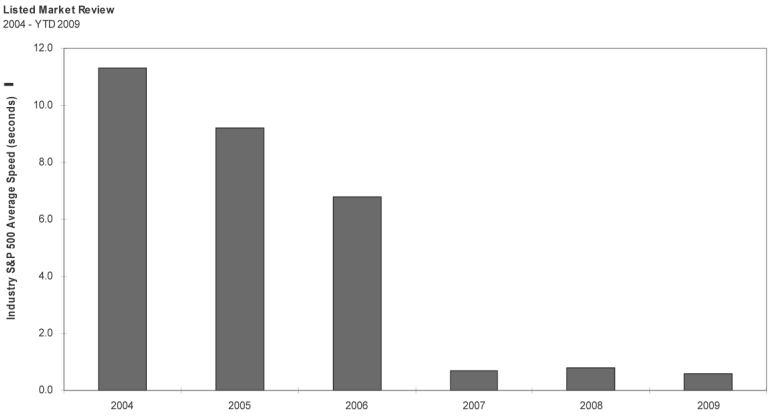
There has never been a better time to be an investor (large or small) in U.S. equities. Execution quality (speed, price, liquidity) are at historically high levels, while transaction costs (explicit and implicit) are at historically low levels.

The U.S. equity markets are the fairest, most transparent and most liquid markets in the entire world. Remember that during the course of the last year, a tumultuous one to say the least, the equity markets worked flawlessly. One may not have liked the direction prices went at times but all investors could act on their investment decisions swiftly and with surety. The equity markets never seized up like many of the credit markets and loan markets. In fact, they were open every day all year, distinguishing themselves in their reliability and robustness.

An extraordinarily important fact, however, continues to be overlooked—investors have seen substantial improvements in execution quality. For example:

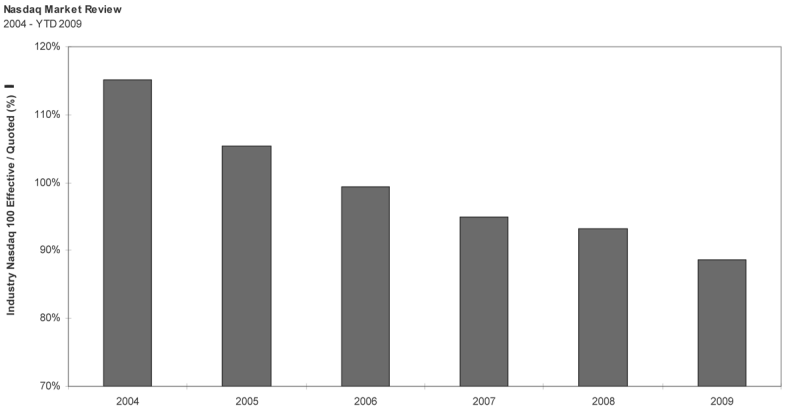
a. The amount of times investors receive a price better than the national best bid or offer (NBBO) has risen significantly over the years.

b. Today, the industry average execution speed for retail market orders in S&P 500 stocks is less than one second. In 2004, it took nearly 12 seconds to execute that same order.



1 Execution Quality calculations are for market orders sizes 100-1999 shares. Source: Thomson Transaction Analytics

c. Effective spread is a comprehensive statistic designed by the SEC to measure the price received by an investor relative to the NBBO, and it is often set as a ratio to the quoted spread (*i.e.,* Effective to Quoted Spread, or EQ)—with the lower number indicating that the investor is receiving a better price. In 2004, an investor looking for an execution in a NASDAQ-100 stock could expect an EQ of roughly 115 percent. Today, that same order could receive an EQ closer to 90 percent—over 20 percent improvement in pricing for investors.



1 Execution Quality calculations are for market orders sizes 100-1999 shares. Source: Thomson Transaction Analytics

d. The realized spread compares the execution price to the NBBO 5 minutes later. The smaller the average realized spread, the more market prices have moved adversely to the market center's liquidity providers after the order was executed, which shrinks the spread "realized" by the liquidity providers. In other words, a low average realized spread indicates that the market center was providing liquidity even though prices were moving against it for reasons such as news or market volatility. Retail size orders (fewer than 500 shares) in NASDAQ securities are receiving some of the lowest realized spreads in the last 8 years—supporting the thesis that market participants are providing liquidity even though prices may be moving against them.

The facts show that investors have benefited greatly over the years as a direct result of the developments in market technologies. In fact, in speaking before the Security Traders Association's Annual Meeting on October 4, 2007, former SEC Commissioner Annette L. Nazareth stated that,

> Today, the landscape has changed dramatically. In August of this year [2007], for example, NYSE's market share in NYSE-listed equities was approximately 45.8 percent. For the first time, ATSs and ECNs are now competing head-on with the listed markets . . . What a difference true competition makes!

High speed computers, IOIs, dark pools, *etc.,* are not the problem; indeed, they are the culmination of our free-market system—competition. Competition has led to better executions (both speed and price) for investors. We should not look to impede competition; rather we should always look for ways to enhance it. That is what keeps our capital markets great. Former SEC Chairman Arthur Levitt got it right when he recently said,

> Investors large and small have always been served well by those looking to build the deepest possible pool of potential buyers and sellers, maker trades at a better price, and all as quickly as possible . . . More liquidity, better pricing and faster speeds are the building blocks of healthy, transparent markets, and we must always affirm those goals.——*Wall Street Journal*—August 17, 2009.

3. There are not two-tier markets

Retail investors are able to harness the connectively and lightning-fast technology made available to them by their brokers and the execution venues that handle their order flow. From a speed and access point of view, investors are able to access some of the best trading technology available today—at little or no cost.

Market venues spend hundreds of millions of dollars every year on technology, including data centers, communication lines and infrastructure. They look for new and improved ways to source and access liquidity, in the most effective and efficient manner (including, IOIs, dark pools, colocation, and countless order types). The investor community is provided access to many of these tools and technologies without charge (other than, of course, the small commission they pay their broker). That's

right—investors get access to nearly all liquidity pools and they can harness some of the fastest and most sophisticated technologies in the world. For example, as noted above, Knight is connected to all key liquidity pools. We colocate our computers at various market centers, and we deploy some of the fastest, most sophisticated trading technology in the world, all of which is brought to bear for the purpose of executing our clients' trades. Simply put, if a retail investor gives a market order to buy 500 shares of Starbucks to his broker and that broker routes the order to Knight (or, many other execution venues), that order will likely be executed at the NBBO, or better, in less than a second. The cost to the investor is simply the commission paid to their broker (typically, less than $10). Knight, as well as most other nonexchange execution venues, provides access to all of its technology, liquidity, and gateway to the marketplace at no charge to the retail investor.

We fully believe that if the SEC accounts for different forms of market structure needed for different participants, it will conclude that the "little guy" (*i.e.,* retail investor) truly benefits from IOIs, dark pools, and the market processes designed to facilitate the sourcing of liquidity and enhancing execution quality. Remember, the retail investor is not operating alone. Retail investors give their orders to well-armed executing brokers who have access to the various liquidity pools in the market. Additionally, brokers often turn to executing venues (like, Knight and others) to gain further access to the markets. Taken together (the broker and the execution venue), these robust resources are brought to bear for the benefit of retail investors—providing them with a vibrant gateway into the marketplace and unprecedented access and liquidity. The investor is indeed not in it alone. This is not "David vs. Goliath." To the contrary, "David" has retained "Goliath," leveraging resources heretofore unavailable to retail, who swiftly and expertly accesses the market on his behalf.

4. Competition and innovation

We fully support the SEC's initiative to review the broad range of market developments which have helped shape our equity markets in recent years. Competition and innovation have led to advancements in trading technologies over the last several years. In fact, Regulation NMS helped pave the way for competition to thrive among market participants. In addressing the STA at its Annual Meeting on October 13, 2006, SEC Commissioner Nazareth stated,

> Two of the Commission's primary goals for Reg NMS are to promote vigorous competition among markets and to remove any competitive advantages that the old rules may have given manual markets. All evidence to date indicates that these goals are well on their way to being met.

Those advancements have resulted in more liquidity, more price improvement and faster executions. Investors of all shapes and sizes (from small retail investors to large institutions) are reaping the fruits of those endeavors. As SEC Commissioner Kathleen L. Casey noted on October 21, 2009,

> Competition has transformed the equity markets. We have moved light years from the slow manual trading that once characterized the New York Stock Exchange. We have moved well beyond the NYSE/NASDAQ duopoly. Today, the U.S. equity markets offer more benefits to more investors than at anytime in history. Over the past decade, advances in technology, coupled with paradigm-shifting regulatory actions such as Regulation ATS, have lowered barriers to entry. The resulting vigorous competition for customer order flow among numerous trading venues—including so-called "dark pools"—has led to more choices of trading centers, greater speed and liquidity, financial innovation, tighter spreads, and lower execution costs. Investors, particularly individual investors, have reaped the benefits of the fierce competition that has developed in this area. Therefore, it is imperative that we not take any regulatory actions that would impede or unintentionally reverse this considerable progress.

5. Sensible rule-making

We believe it is especially important to craft effective trading rules. And there is an old saying that we believe guides this effort: "In God We Trust; everybody else has to bring data." The best rule making is based on careful analysis of all relevant facts. We urge the SEC to look closely at the statistical evidence of how efficiently the equities markets currently operate; to assess how much value the current system brings to all investors; and, to insure that any rulemaking withstands a rigorous cost-benefit analysis.

Knight has advocated repeatedly that competition, rather than mandated and prescribed paths to trading, benefits market participants and all investors. For exam-

ple, the SEC's Rule 605 is an excellent example of regulation that increases competition by promoting transparency and comparability. The rule requires market participants to post their execution statistics in accordance with standardized reporting metrics, thus enabling order routing firms to make more informed routing decisions to meet their clients' needs. This has increased competition and pressured market participants to continue to improve the execution of customer orders, while resulting in dramatically reduced costs for investors. We believe the dramatic decrease in brokerage commissions and the split-second executions for most marketable orders in recent years is a direct result of these competitive forces, not regulatory fiat. Additionally, SEC Rule 606 requires brokers to disclose on a quarterly basis the venues to which it routed order flow, as well as any payment for order flow arrangement. The adopting release to Rule 606 states, in part:

> The purpose of requiring disclosure concerning the relationships between a broker-dealer and the venues to which it routes orders is to alert customers to potential conflicts of interest that may influence the broker-dealer's order-routing practices. Currently, Rule 10b-10(a)(2)(i)(C) requires a broker-dealer, when acting as agent for the customer, to disclose on the confirmation of a transaction whether payment for order flow was received and that the source and nature of the compensation for the transaction will be furnished on written request. In addition, Exchange Act Rule 11Ac1-3(a) requires broker-dealers to disclose in new and annual account statements its policies on the receipt of payment for order flow and its policies for routing orders that are subject to payment for order flow. *The Commission believes that disclosure of potential conflicts of interest in conjunction with a quantitative description of where all nondirected orders are routed may provide customers with a clearer understanding of a broker-dealer's order routing practices than is provided under current rules.* (emphasis supplied.)

Regardless of any payments received, the SEC and self-regulatory organizations (SROs), like FINRA and the NYSE, have made it very clear, that the broker's first obligation is to seek best execution. The SEC has stated:

> The Commission anticipates that improved disclosure of order routing practices will result in better-informed investors, will provide broker-dealers with more incentives to obtain superior executions for their customer orders, and will thereby increase competition between market centers to provide superior executions. Currently, the decision about where to route a customer order is frequently made by the broker-dealer, and broker-dealers may make that decision, at least in part, on the basis of factors that are unknown to their customers. The Rule's disclosure requirements will provide investors with a clearer picture of the overall routing practices of different broker-dealers. The Commission contemplates that this will lead to greater investor involvement in order routing decisions and, ultimately, will result in improved execution practices. Because of the disclosure requirements, broker-dealers may be more inclined (or investors may direct their broker-dealers) to route orders to market centers providing superior executions. Broker-dealers who fail to do so may lose customers to other broker-dealers who will do so. In addition, the improved visibility could shift order flow to those market centers that consistently generate the best prices for investors. This increased investor knowledge and involvement could ultimately have the effect of increasing competition between market centers to provide superior execution. (emphasis supplied)——*See,* SEC Release No. 34-43590 (November 17, 2000).

This is precisely the type of transparency which has led to fierce competition among market centers. That healthy competition has resulted in the extraordinary levels of execution quality retail investors enjoy today. To that end, Knight supports the SEC's efforts to:

- Place more controls on sponsored access. Market participants must insure that those who access the market through their MPID have procedures in place to insure they fully conform to industry rules and regulations.
- Require reporting of end-of-day trade volumes and attribution for ATSs.
- Move to a 2 percent volume threshold for ATSs.
- Standardized rules and fees for colocation designed to insure fair access to those who seek to such services.

6. The current proposals may push more liquidity into the dark

Regulation ATS sets forth a two-prong test for determining whether quotes need to be displayed in the consolidated quote stream under Rule 301(b)(3). In short, if an ATS displays orders to its subscribers and has at least 5 percent (.25 percent under the new proposal) of the ADV of the stock for 4 of the preceding 6 months, it has to reflect the order in the displayed market. So, increasing the possibility that ATSs will break the lower thresholds will simply cause more ATSs to go completely dark (*i.e.,* not reflect orders to its own subscribers) in order to avoid displaying their orders.

Additionally, indications of interest (IOIs) serve as a valuable method of market participants to communicate with each other. By using IOIs effectively, market participants are able to source valuable liquidity on behalf of investors—liquidity that may not have otherwise been available in the marketplace. So, further constricting their use will undoubtedly have the unintended consequence of further constricting liquidity.

It is noteworthy to reiterate the comments made recently by SEC Commissioner Troy A. Paredes at the SEC's Opening Meeting on October 21, 2009:

> [M]ore public quotes may not be the predominant result of the rule amendments. Rather, as market participants adjust to new public display obligations, the information contained in IOIs might be scaled back so that IOIs, as a matter of practice, are nonactionable and thus are not quotes that must be publicly displayed. Presumably, if IOIs signal less information, those looking to interact with nondisplayed liquidity would rely more on "pinging" or other techniques to test liquidity across dark pools. If this scenario occurs instead of there being a meaningful increase in displayed liquidity, it is worth asking whether the rule amendments before us ultimately would be beneficial. In other words, might the *status quo* be preferable to darker dark pools?

IOIs, dark pools, and better trading technologies are the tools brokers use when seeking best execution for their clients. Further limiting their use of these resources, we believe, will not enhance the displayed markets; rather, it will inevitably lead to wider spreads, less liquidity and higher costs. One only needs to turn back the clock 5 years to see evidence of this. When the exchanges had a dominant stranglehold on the markets and volume, execution quality suffered and trading costs for investors was exponentially higher than it is today.

7. The displayed markets are valid and robust

Some have argued that the value of the displayed markets is somehow eroded when trading occurs off an exchange. We disagree. In fact, trades executed off of an exchange predominately occur at the NBBO (or better) which is completely consistent with both the letter and spirit of Regulation NMS. Nevertheless, the majority of trading volume today continues to take place on an exchange. In fact, NASDAQ, the NYSE, Direct Edge and the regional exchanges account for approximately 70 percent of overall market volume. Regulation ATS and Regulation NMS helped to break the monopoly the exchanges had on market share. In fact, one of the "darkest pools" was the old specialist system on the floor of the NYSE. For years the specialists controlled trading information and access to data. Barriers to entry were lowered and competition was able to flourish, forcing the NYSE and NASDAQ to compete for market share, rather than simply demand it as a birth right. Commissioner Casey also noted on October 21:

> This trading volume migration from the incumbent exchanges to other venues that publicly display trading interest demonstrates the robust competition among trading centers for customer order flow. It also demonstrates that nondisplayed liquidity has not materially reduced the quantity of publicly disseminated trade information. Therefore, it appears that an obsessive focus on the rise of dark ATSs is misplaced. Quoting venues in the aggregate are doing just fine, and the competition among them is a good thing, not something we need to "correct."

Market participants of all shapes and sizes actively trade both in displayed and undisplayed venues. If the prices in the displayed venues are not valid, trading firms quickly enter the displayed venues with orders and trades until the pricing is corrected. If this did not occur, those price dislocations would cause all venues (dark and light) to be irrational. Thus, any suggestion that undisplayed venues do not contribute to price discovery is illogical. Market participants trade in both venues, insuring that pricing is rational and *bona fide.*

Conclusion

Knight appreciates the constructive roles this Committee and Subcommittee have played in the oversight of the markets and the rulemaking process. Your oversight helps to ensure that the U.S. capital markets remain competitive and innovative, thus benefiting all investors.

We also fully support the SEC's initiative to review the broad range of market developments which have helped shape our equity markets in recent years. Competition and innovation, spurred by insightful rule changes fostered by the SEC, have resulted in dramatic improvements in market technologies and execution quality for the benefit of public investors—large and small. The U.S equity markets are the most liquid and efficient in the entire world, and have performed exceedingly well over the last several years. From an execution quality perspective, we believe that there has never been a better time to be an investor in U.S. equities. The advantages are considerable, including: speed and stability, price improvement, and a significant reduction in transaction costs. The empirical and statistical evidence available under SEC Rule 605 shows tremendous investor benefit under the current trading and regulatory market structure.

We echo the comments of many of the SEC Commissioners that these important issues must be driven by the careful analysis of empirical data, and not be driven by emotion or politics. Indeed, SEC Commissioner Casey stated quite pointedly during the SEC's recent Open Meeting,

> [I] think it is necessary for the Commission to first develop a deeper understanding of the whole range of U.S. equity market structure issues before we consider adopting these amendments. In my view, it is important that regulators act with humility. Sometimes we don't know what we don't know, and if we rush to regulate without a complete understanding of the extent to which complex and dynamic activities may be interrelated, the specter of unintended consequences looms large. The regulatory process for rethinking market structure, like short selling, needs to be driven by data, not politics or unfounded assumptions.

We are confident that an independent SEC will be careful and thoughtful in its work—and not be swayed by any market participant's self-interest. We urge the Committee, Subcommittee, and the SEC to look closely at the statistical evidence of how efficiently the equities markets currently operate; to assess how much value the current system brings to all investors; and, to insure that any rulemaking withstands a rigorous cost-benefit analysis. We must insure that any proposed new rules do not do more harm than good.

Thank you for your interest in these issues and for the opportunity to contribute to this important dialogue.

PREPARED STATEMENT SUBMITTED BY THE INVESTMENT COMPANY INSTITUTE

The Investment Company Institute appreciates the opportunity to submit this statement for the record in connection with the Subcommittee's hearing on October 28, 2009, on "Dark Pools, Flash Orders, High Frequency Trading, and Other Market Structure Issues."

The structure of the securities markets has a significant impact on Institute members, who are investors of over $11 trillion of assets and who held 24 percent of the value of publicly traded U.S. equity outstanding in 2008. We are institutional investors but invest on behalf of over 93 million individual shareholders. Mutual funds and their shareholders, therefore, have a strong interest in ensuring that the securities markets are highly competitive, transparent and efficient, and that the regulatory structure that governs the securities markets encourages, rather than impedes, liquidity, transparency, and price discovery. Consistent with these goals, mutual funds have strongly supported past regulatory efforts to improve the quality of the U.S. markets. We therefore support the current examination of the market structure in the United States.

Issues Facing the Current U.S. Market Structure

The current debate is very similar to that which occurred during the last major review of the structure of our markets, specifically during the adoption of the Securities and Exchange Commission's (SEC) Regulation NMS. In Regulation NMS, the SEC noted that its proposals were designed to address a variety of problems facing the U.S. securities markets that generally fell within three categories: (1) the need for uniform rules that promote the equal regulation of, and free competition among,

all types of market centers; (2) the need to update antiquated rules that no longer reflect current market conditions; and (3) the need to promote greater order interaction and displayed depth, particularly for the very large orders of institutional investors.

Regulation NMS addressed these three categories but in the intervening years since its adoption, the securities markets have changed dramatically. The third category above, promoting greater order interaction and displayed depth, continues to be of great importance to mutual funds. As the SEC recognized in proposing Regulation NMS, "perhaps the most serious weakness of the [national market system] is the relative inability of all investor buying and selling interest in a particular security to interact directly in a highly efficient manner. Little incentive is offered for the public display of customer orders—particularly the large orders of institutional investors. If orders are not displayed, it is difficult for buying and selling interest to meet efficiently. In addition, the lack of displayed depth diminishes the quality of public price discovery."

Problems surrounding the lack of order interaction, its causes, and its impact on the securities markets have long confronted mutual funds. The Institute and its members have, for many years, been recommending changes that would facilitate greater order interaction and, in turn, more efficient trading. A consistent theme throughout all of our recommendations was that in order to promote greater order interaction and displayed depth in the markets, a market structure should be created that contains several key components, the most significant of which are:

- Price and time priority should be provided for displayed limit orders across all markets;
- Strong linkages between markets should be created that make limit orders easily accessible to investors; and
- Standards relating to the execution of orders should be created that provide the opportunity for fast, automated executions at the best available prices.

Investors and the Current U.S. Market Structure

The changes we have experienced in the structure of our markets the last few years have not addressed all of the components we believe necessary for a fully efficient market structure but great strides that benefit all investors have been made. Trading costs have been reduced, more trading tools are available to investors with which to execute trades, and technology has increased the overall efficiency of trading. Make no doubt about it, investors, both retail and institutional, are better off than they were just a few years ago. Nevertheless, challenges remain—posted liquidity and average execution size is dramatically lower while volatility and the difficulty of trading large blocks of stock have increased.

Regulation NMS, which has been largely beneficial to investors, led to dramatic changes. The market structure in the U.S. today is an aggregation of exchanges, broker-sponsored execution venues and alternative trading systems. Trading is fragmented with no single destination executing a significant percentage of the total U.S. equity market. Some of the biggest and most active traders are high frequency traders, who by some accounts trade close to two-thirds of the daily volume of our securities markets. Tremendous competition exists among exchanges and other execution venues, primarily driven by differences in the fees they charge and the speed by which they execute trades, with floor-based exchanges quickly becoming irrelevant.

To combat the difficulties in executing large blocks of stock, mutual funds have demanded much greater control over their orders to protect themselves from the leakage of information about their orders. As such, funds have adopted new trading technologies to help them cloak their orders and deal more directly with other institutional investors. This provided the incentive that led to many of the technological innovations in the securities markets including, as discussed below, the development of certain alternative trading venues.

Trying to develop a market structure that promotes the fundamental principles of a national market system while balancing the competing interests of all market participants is no easy task. Nevertheless, one point should be made clear: mutual funds' sole interest in this discussion is in ensuring that proposed market structure changes promote competition, efficiency and transparency for the benefit of all market participants and not for a particular market center, exchange or trading venue business model. Market centers should compete on the basis of innovation, differentiation of services and ultimately on the value their model of trading presents to investors. We are hopeful that regulators can achieve the goals of a national market system while focusing on the interests of the markets' most important participant—the investor.

Dark Pools

Much of the current debate over the structure of the U.S. securities markets have centered on the proliferation of so-called "dark pools." We believe it is unfortunate that such a pejorative term has now become ingrained in the terminology used by the securities markets and policymakers to describe a type of trading venue that has brought certain benefits to market participants. We therefore are reluctant to use the term when discussing issues surrounding this part of our market structure and urge that an alternative term be established to describe such venues. However, since no alternative term has yet been formally recognized and for purposes of clarity, we will use "dark pools" in this statement to address these alternative trading venues.

Dark pools are generally defined as automated trading systems that do not display quotes in the public quote stream. Mutual funds are significant users of these trading venues, which provide a solution to problems facing funds when trading large blocks of securities, particularly those relating to the frontrunning of mutual fund orders. They provide a mechanism for transactions to interact without displaying the full scale of a fund's trading interest and therefore lessen the cost of implementing trading ideas and mitigate the risk of information leakage and market impact. They also allow funds to shelter their large blocks from market participants who seek to profit from the impact of the public display of these large orders. The issue with these trading venues, however, is that the benefits of not displaying orders also lead to concerns for the structure of the securities markets. Sheltering orders from the marketplace can impede price discovery and transparency. As discussed above, these two elements are critical in creating an efficient market structure.

SEC Proposals

The SEC last week set forth several proposals to bring "light" to dark pools and to address concerns about the development of a two-tiered market that could deprive certain public investors from information regarding stock prices and liquidity. Specifically, the SEC's proposals address concerns about pretrade transparency, including pretrade messages sent out by dark pools in an effort to attract order flow but that are only sent to selected market participants (so-called "indications of interest" or "IOIs"). IOIs raise questions about how "dark" some of these venues truly are on a pretrade basis as well as whether these messages are similar to public quotes and therefore should be treated as such. The proposals also would lower the trading volume threshold required for the display of these venues' best-priced orders.

The SEC's proposals also would address certain concerns about the lack of post-trade transparency, particularly concerns that it often can be difficult for investors to assess dark pool trading and to identify pools that are most active in particular stocks. Currently, public trade reports do not identify whether an over-the-counter trade was reported by a dark pool and, if so, its identity. The proposals would create a similar level of post-trade transparency as currently exists for registered exchanges.

Institute Views

We appreciate the Government's desire to examine trading venues that do not display quotations to the public and understand concerns about the creation of a two-tiered market. As discussed above, the Institute has long advocated for regulatory changes that would result in more displayed quotes. At the same time, policymakers should take a measured approach to making trading through dark pools more transparent and we urge policymakers to ensure that there are no unintended consequences for mutual funds, which must execute large blocks of securities on a daily basis on behalf of their shareholders.

The SEC has taken an important step in this regard in its proposals. The proposals would preserve the ability for mutual funds to trade large blocks of securities by allowing certain large orders to be "dark" to address concerns about the leakage of valuable information about mutual fund trades or the frontrunning of fund orders. We must consider, however, whether additional steps must be taken by policymakers to address other ways that mutual funds trade, for example, when funds break up large orders into smaller pieces that are executed separately. We also urge policymakers to not view the issues surrounding dark pools in a vacuum without also examining other market structure issues. We therefore look forward to a broader debate on market structure that will raise important questions about numerous aspects of our markets in general.

High Frequency Trading and Related Issues

High frequency traders and a host of issues connected to high frequency trading have also garnered the attention of regulators. The proliferation of alternative trading venues, including dark pools, and the accompanying technological advancements in the securities markets, set the stage for the entrance of high frequency traders. There are many benefits to high frequency trading that have been cited, including providing liquidity to the securities markets, tightening spreads, and playing a role as the "new market makers." High frequency trading, however, also raises a number of regulatory issues including those relating to flash orders, colocation, and the risks of certain sponsored access arrangements, as discussed below.

Mutual funds do not object to high frequency trading *per se.* We believe, however, that given the growing amount of the daily trading volume that high frequency trading now constitutes, many of the issues surrounding this trading practice are worthy of further examination.

Flash Orders

The SEC already has proposed to prohibit "flash orders." "Flash orders" are generally orders that trading venues disseminate, often for only milliseconds, to a select group of market participants, primarily high frequency traders, before they are displayed or traded against displayed bids or offers. While this advantage occurs in milliseconds, it gives a clear advantage to those who see it and have the capability to react to it, *i.e.,* those with the requisite electronic connections. Most mutual funds do not allow their orders to be flashed, primarily because the process of displaying the orders to a select group of market participants could result in information leakage.

The free look that flash orders provide is not new. Proponents of flash orders argue that flash quotes are nothing more than the electronic version of practices that previously occurred throughout the equity markets. That is correct. For many years, the specialists at the NYSE had the same informational advantage relative to other market participants and for many years mutual funds asked that this information advantage be eliminated. We continue to believe that such information advantages, and therefore flash orders, should be immediately banned.

Colocation

"Colocation" is another "fair access" issue that has been raised relating to high frequency trading. Colocation refers to providing space for the servers of market participants, often high frequency traders, in the same data center housing the matching engines of an exchange. Colocation can serve to greatly reduce the delay associated with locating servers far away from the exchanges which, for high frequency traders, can mean the difference in whether they can execute a trade. While we do not have an issue with the concept of colocation, we believe that all investors should have an equal and reasonable opportunity for access to a colocation facility.

Sponsored Access

Finally, sponsored access is the practice of market participants that are not themselves broker-dealers obtaining direct access to markets through a broker-dealer's trading identifier. Certain types of sponsored access arrangements provide access to markets without any broker-dealer pretrade risk management system reviewing orders being transmitted. For high frequency traders, this type of sponsored access saves valuable time in the execution of their trades.

Mutual funds do not often use sponsored access arrangements, as the speed that these arrangements provide is not critical to the type of trades funds typically execute. We recognize, however, that unfettered sponsored access arrangements raise a series of supervision, compliance and risk-management issues that could impact the efficiency of the securities markets, *e.g.,* a broker-dealer sponsoring a trader may not have adequate controls over the trader that it has connected to an exchange and the trader is not an exchange member subject to exchange regulation. We therefore support proper controls over sponsored access arrangements.

We thank the Committee for the opportunity to submit this statement and look forward to continued dialogue with the Committee and its staff.