NASDAQ OMX

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Subcommittee on Securities and Investment
Hearing on Computer Trading

Thank you Chairman Reed and Ranking Member Crapo for the opportunity to testify today on computer trading in U.S. securities markets.

Computer trading is a fact of life and has been the default method of trading for billions of trades over the past several years - *Billions* of trades that happen on our market and others without any concern or problem. While there are issues to review, computer trading has a proven track record of delivering benefits for investors and market participants that includes bringing new investors to the markets, equalizing the information advantage that used to be the staple of manual markets, lowering trading costs and giving the market expanded abilities to handle trade and message traffic growth that would freeze manual markets. As we saw during the financial crisis of 2008, the U.S. equities markets did not freeze-up and billions of trades that investors needed were handled by our computers. And of course, this was done without any contribution from the equity asset class to the list of problems that had to be managed. So, while we have experienced some trading anomalies like the Flash Crash of May 6, 2010, and a number of computer-trading events. I believe these are isolated technology incidents and not symptoms of deeper market structure concerns. At NASDAQ OMX we are laser-focused, every day, on *how do we improve our market and make it more resilient and robust?*

This question is critical because a well-functioning equity market is needed for efficient capital formation, innovative competition, and job creation. Companies like Microsoft, Cisco, and Intel, used capital raised from listing on NASDAQ to make cutting edge products that have

transformed our lives. Along the way, these companies created millions of jobs and strengthened many communities. Innovative high-growth companies attract new talent and that talent pool then demands new goods and services. This virtuous cycle has played out in dozens of venture zones, from Silicon Valley to the Northern Virginia high tech corridor. And they have created enormous wealth opportunities, allowing millions of average investors to share in that wealth--enabling them to buy homes, put children through college, and retire with financial security.

In light of recent events, some may forget the unique and central role exchanges have played and continue to play in U.S. equities markets. All that your average constituent associates with "the market" starts with an exchange. The iconic public companies they recognize - Apple, Google, eBay and Amazon - must satisfy exchanges listing standards, and they remain subject to exchange regulations against corporate fraud and abuse. The exchange listing process and regulatory program culminate in the IPO process that provides entrepreneurs with efficient platforms for capital formation and job creation. Only equities exchanges such as NASDAQ are entrusted with the important responsibility to be a catalyst for growth and wealth creation.

After the IPO, exchanges have a unique and continuing duty to foster price discovery and transparency. Exchanges like NASDAQ create and disseminate the ticker symbols and prices that your constituents see on television stations like CNBC, in newspapers like the Wall Street Journal, and at internet portals like Yahoo Finance. Exchange quotes then create the reference price for all other trading, not only in equities but in other asset classes as well. Dark pools and other competitors use exchange quotes as a reference price for trading equities. Markets, such as the Chicago Mercantile Exchange and the Chicago Board Options Exchange, use equities exchange quotes to trade options, futures, and other derivatives. Vanguard, Fidelity, and Schwab use exchange prices for mutual funds, ETFs, and other instruments. Those ticker symbols are a

byproduct of the rules and sophisticated regulatory systems that equities exchanges develop and enforce to protect investors and to provide orderly markets. They are the result of a system that is by law fully transparent, and that publicly discloses all rules and prices to all customers and treats all customers equally.

Only exchanges have the authority and responsibility to oversee broker-dealers as they interact with the market. That authority is the result of a rigorous public process of qualifying to be an exchange conducted by the SEC - in the case of NASDAQ it took six years. Exchanges alone adopt member and market regulation rules, develop automated surveillance systems to detect rule violations, and discipline broker-dealers that violate rules and harm investors. Congress recognized that enforcing rules in U.S. securities markets is so important that two regulators rather than one are needed to enforce them. Congress codified the authority of exchanges to act as self-regulatory organizations (SROs), to set and enforce trading rules and to halt trading during extraordinary national or international events. SROs supply the SEC and other regulators vital information about the trends and performance of U.S. capital markets. The SEC is our partner in protecting investors.

In fact, exchanges have heavy responsibilities to create a safe market for investors, characterized by fair access, transparency and efficiency. No other market participant is charged with or even permitted to undertake this burden. Alternative trading systems (ATSs) are not entrusted to regulate and discipline their users in this manner. An ATS can choose to regulate its users, but it must then register as an exchange and accept SRO responsibilities. Today, virtually every ATS has the option to register as an exchange. One need only look at the list of SRO responsibilities and obligations that registration triggers to understand why so few ATSs voluntarily take that step.

While we often discuss the importance of capital formation, our regulatory responsibilities and the IPO process, let me add another important, but sometimes overlooked branch of our role in the markets - our role in the daily trading dynamics of the market. Trading and trading behaviors like price discovery, best bid and best offer and visible liquidity are very important to companies as they might seek secondary offering cash injections to their businesses and use their stock as currency in the market to achieve strategic goals like acquisitions. Price discovery and transparent liquidity are also very important to investors as they make informed decisions about which stocks to buy and at what price and when to sell. All the buying and selling and active trading in the equities market is not a grand game of speculators – it has real job creators and investors looking for the market's best information to make rational business and investing decisions. Exchanges maximize transparency, strive for fairness and support that price discovery engine and it is our unique market role to perform that function. We are not in business just to see trading for trading's sake. NASDAQ OMX is an exchange to produce transparent quoting and trading that helps price discovery, helps add liquidity, tightens spreads and benefits the continuous market is what we strive to support.

Cooperation:

The role of exchanges is more important than ever in today's challenging environment. U.S. markets are complex, fragmented, and inter-connected. Markets and traders leverage new technologies to trade near the speed of light. We at NASDAQ are working tirelessly to ensure that markets are strong and fair, and that as the pace of trading accelerates, so too does the pace of regulation and investor protection.

When computerized trading appears as a threat to investors, the SEC naturally turns first to exchanges for assistance. Regardless of where the problems began, regardless of where the damage was felt, the exchanges are always on the front lines partnering with the SEC and we work closely with the SEC to fix and improve the equities markets. In the aftermath of May 6th, the SEC and the exchanges worked quickly and cooperatively to devise new protections to keep computer trading errors from spreading too rapidly or inflicting unacceptable harm on the overall market. The exchanges reformed their rules for breaking trades, instituted single stock circuit breakers, updated market-wide circuit breakers, and we will implement the Limit Up/Limit Down mechanism in February. NASDAQ has also developed tools to help broker-dealers manage their obligations under the Market Access Rule.

In the wake of several highly publicized computer malfunctions, the exchanges are again leading the industry in a collaborative working group. A key and challenging initiative being discussed by this Industry Working Group, and one that NASDAQ fully supports and is helping to lead and define, is the implementation of "Peak Net Notional Exposure" levels, or "kill switches," that would automatically trigger a cessation of trading when an individual firm exceeds pre-determined risk thresholds. The Industry Working Group is considering various approaches to both the SRO-level and broker-dealer level requirements, as well as a means for coordinating cross-market checks to create the market-wide check needed to combat the effects of market fragmentation and inter-connectedness.

Testing:

One important area of focus is testing and industry preparedness. NASDAQ is partnering with Carnegie Mellon University to form the Carnegie Mellon Software Engineering Institute

dedicated to help bring the industry together to improve the resilience of financial services technology. We hope to form and lead a group of market participants, regulators, technology providers, and academic institutions with the goal of driving resilience in the large scale software engineering and technology arena and being recognized globally as a leader in helping the financial markets become more resilient and robust.

The industry has learned through experience that it must change the way we test. In the past, industry-wide system changes have utilized a testing methodology that tested for system design integrity. For example we might test a software update by having our members send us test orders to ensure the software does what we are asking it to do. Or, we might ask members to challenge our systems with high volumes. Instead, we should be testing each other's systems to try to break them. A more robust testing environment would assume breakdowns by all testing participants to visualize the impact on a system's integrity. Such "destructive" testing will spot troubles that the kinder-gentler testing of the past would not uncover.

High Frequency Traders ("HFT") firms have attracted much media attention, but they are not the only "fast" players in the marketplace. Exchanges, dark pools and broker systems are all connected and all use sophisticated technology. These systems communicate in slices of time that approach the speed of light. This is a great achievement, but it means that previously minor events now represent profound risks that can tangibly affect investor confidence. NASDAQ OMX is not immune to this issue, and we are committed to answering this challenge.

<u>High Frequency Trading:</u>

NASDAQ believes that technological developments must be implemented in a manner that ensures all investors a "fair deal." Average investors must not be placed at a disadvantage to

professional traders by rules that permit selective disclosure of information, preferential access to trading interest, or the appearance of a two-tiered market. All markets that trade the same securities should be equally transparent about their operations, including the rules governing their trading systems, the criteria for admission and the prices of comparable services. The Commission must regularly examine whether the application of new technologies contribute to regulatory arbitrage.

For example, exchanges and regulators around the world are analyzing the pros and cons and overall impact on markets of HFT. The International Foresight Project was commissioned by the British government's Department for Business, Innovation, and Skills (BIS) to investigate the effects of HFT. This definitive and independent study, led by Sir John Beddington, Chief Science Officer for the British Government, found that HFT is likely positive for markets. Similarly, the Swedish Financial Services Agency released its own report finding that HFT in that country also had a positive impact on liquidity, and that regulators and exchanges continue to refine their tools for ensuring proper surveillance.

Many in the public arena vilify HFT as a business model issue. It is our view to always caution against such sweeping criticism. When, like the Beddington study, HFT is studied in depth, you find benefits to several metrics from the broad participation in our markets by firms that we consider to be high frequency traders. Like the British and other studies, we find that HFT trading tightens spreads and adds very valuable liquidity – certainly positive for our markets. We know that everyone in the markets has a profit motive and that generally incentivizes innovation and competition among participants. What we know from experience is that our industry, no matter the business model, will always attract individual players who cross the line and NASDAQ OMX, the other exchanges, FINRA (the Financial Industry Regulatory

Authority) and the SEC work to expose those individual bad actors. It seems the tenor of the debate about HFT has become too broadly negative towards the business model. The academic evidence about HFT supports the fact that they generally add value to the market.

It is not enough simply to vilify fast trading. Regulators and exchanges are working to identify and address specific bad actors and specific bad outcomes such as false, misleading or deceptive practices. NASDAQ has worked diligently to ensure that the pace of its regulation matches the pace of trading. NASDAQ has partnered with FINRA to develop special HFT inspections. For example, in December of 2010, NASDAQ OMX retained outside experts to assist in assessing and improving our internal training program on HFT strategies. Through focus and effort, NASDAQ's Market Watch staff has developed 11 new alerts (algorithms specifically designed to spot certain trading behaviors) in addition to the 21 surveillances FINRA utilized for HFT related reviews.

To improve our own regulatory program and the regulatory programs of exchanges around the world, NASDAQ invested in state-of-the-art technology. In 2010, NASDAQ acquired The SMARTS Group, the world's leading provider of software for automated surveillance for exchanges, regulators, and brokers. With SMARTS, NASDAQ literally can deploy high speed surveillance to match high speed and any other kind of trading. We have held demonstrations for many members and staff of this committee to demonstrate the power of the SMARTS system. The feedback from those demonstrations has been positive.

These efforts have paid off. NASDAQ surveillance and referrals to FINRA and the SEC have improved compliance. While we cannot go into great detail, we have a full plate of pending Investigations on issues related to High Order/ Low Execution Ratios, Wash Trading,

Layering, Manipulation of the closing auction, Manipulation through master-sub relationship, Supervision, Order Entry controls. NASDAQ has detected violations by high frequency traders resulting in fines as high as $3.5 million and in the expulsion of firms and individuals from the securities industry. NASDAQ is protecting investors from people that use technology to prey on them. Our goal is always to constantly evaluate and improve our market to make it as robust and fair as possible using technology and the wisdom and experience of our industry-best employees.

Complexity:

Any evaluation of the health of our markets and the ecosystem of computer trading must include a discussion of complexity. There are 13 registered exchanges active in the U.S. equities markets. The SEC also allows trading on 40+ venues in the U.S. where a broker can send one or more of their orders. Each of these venues has its own systems and procedures and each competes for orders from brokers and ultimately investors. Each venue has its own order types and each is continually talking to investors to develop new order types that satisfy their needs. The result is dozens or even hundreds of different order types for members to understand and program. Is the explosion of order types helpful or harmful for the market?

While some order types have come under intense media and regulatory scrutiny, let me be clear, NASDAQ OMX order types do not provide advantages to certain users allowing them to jump ahead in line at a given price level. NASDAQ believes that each order type it creates should be designed to make our markets better, and to improve transparency and price discovery. Fairness and equal access are key SRO responsibilities and we will always adhere to those principles. NASDAQ goes through a rigorous process to get order types approved by the SEC. As an exchange we have to expose innovative ideas to the market through the notice and

comment process, often allowing our competitors time to mimic our idea and beat us to market. That is part of our SRO burden. For the sake of transparency and to help members understand our order types, we recently posted on our website a list and a plain-language description of NASDAQ's order types.

Computer trading and some of the concerns that have been outlined to Congress are in many respects the direct result of market structure decisions. Many problems with our markets stem from well-intentioned regulations like Regulation ATS and Regulation NMS, which sought to promote competition and to resolve tensions between electronic and floor-based trading. Regulation NMS has led to an increase in dark trading, which denies market participants a clear view of trading interest in a given stock. Dark trading is a concern in many countries; Canada recently modified its market structure to limit dark trading and to maximize price discovery. The Commission has similar market structure proposals pending since 2009.

Market-Based Approaches:

In addition to regulatory enhancements, NASDAQ has also developed several market-based approaches to improve the trading experience, and help re-establish the prominence of the public company model. For example, NASDAQ launched the first "price/size" market to create incentives for quotes that offer deep liquidity rather for quotes that are fast. Also, NASDAQ voluntarily eliminated flash orders from its equity markets. NASDAQ also introduced the "MinLife" order to incentivize a longer quote life. Finally, NASDAQ is the only exchange to recently institute a charge for excessive messages to discourage a trading technique used primarily by high frequency traders.

NASDAQ OMX is also working to improve the market structure for small public companies that are job creation dynamos when given a supportive ecosystem. This past year, the JOBs Act recognized the importance of special rules for these emerging companies. However, Congress did not go far enough and consider how these companies were treated once they actually go public. Regulation NMS subjects these smaller stocks to a one-size-fits-all market structure. Apple, Microsoft, GE and other large cap stocks trade relatively well, despite a highly fragmented marketplace. Small companies however are not best suited for a fragmented liquidity pool and dark trading. Smaller stocks do not perform well in the fragmented marketplace no matter their listing venue. This can compromise the momentum for smaller public companies and capital formation within this class of stocks. There are innovative ideas to empower small companies to help their stocks trade more often and more efficiently:

Tick Size Pilot Program: Allows smaller companies to opt-in for a wider tick size for their stock to allow more spread for market-makers to be incentivized. Multiple tick size regimes are already used already in numerous other countries successfully.

Market-Maker Support Pilot Programs: Allows the company to opt-in to a program to provide economic support for more aggressive quoting and trading in their stocks. These programs, common around the world, allow the exchange to stand between the broker and the listed company to improve the trading of a stock.

Conclusion:

NASDAQ OMX is passionate about the critical role we play in capital formation, investor protection and job creation. While it presents challenges to everyone, ultimately we believe that technology is an important part of the solution for ensuring orderly and fair markets.

We view efforts to slow-down our markets as counterproductive. Building robust and dependable markets requires legislators, regulators and market participants to continue to come together to drive positive evolution. NASDAQ OMX is committed to working with Congress, the SEC, our fellow exchanges and all market participants to make the U.S. equity market the best in the world. NASDAQ OMX appreciates the opportunity to testify. I look forward to your questions.