2009 Equity Markets Year in Review

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Today's Topics:
The Outlook for Technology and the Markets

- In 2009, the role of the technological innovations of the past decade came under increased scrutiny from politicians, regulators and market participants.
- Three topics have received most of the attention
  - Electronic Trading
  - Co-Location
  - Dark Pools
- Offer perspectives on technological innovation
- Our regulatory outlook – Short Selling, Sponsored Access, "Flash" Orders

Technological Innovation has been Shaped by Regulation and Market Forces

- **Regulation:** Some regulatory changes have expressly encouraged technological change and other incentives to automate.
  - 1997 – The Order Handling Rules encouraged electronic platforms.
  - 1998 – Regulation ATS opened the national market system to electronic platforms.
  - 2000 – Decimalization tightened spreads for retail investors.
  - 2007 – Regulation NMS increased competition and fragmentation.
- **Responses to Regulation**
  - Automation of exchanges and creation of electronic platforms (ATSs).
  - Cost pressures on dealers provided incentives to increase efficiency through technology.
  - Technology also simplified dealing with fragmented markets.

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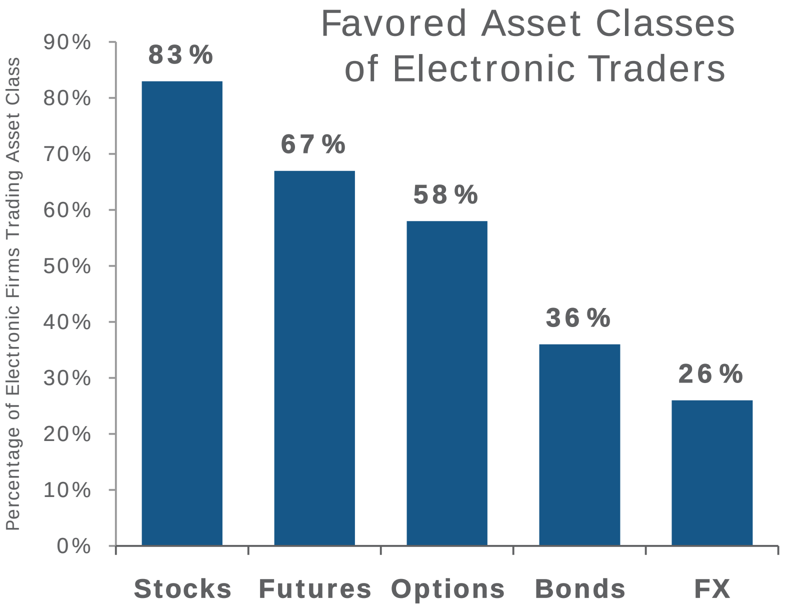
Characteristics of Electronic Trading

- Also known as High Frequency Trading and Algorithmic Trading
- All firms participate in some form
  - Electronic market makers
  - Bulge bracket institutional brokers
  - Wholesalers for retail investors
  - Proprietary traders
- Seek to automate actions of human traders through a variety of computerized trading strategies
- Occurs across all asset classes
- High sensitivity to latency and cost



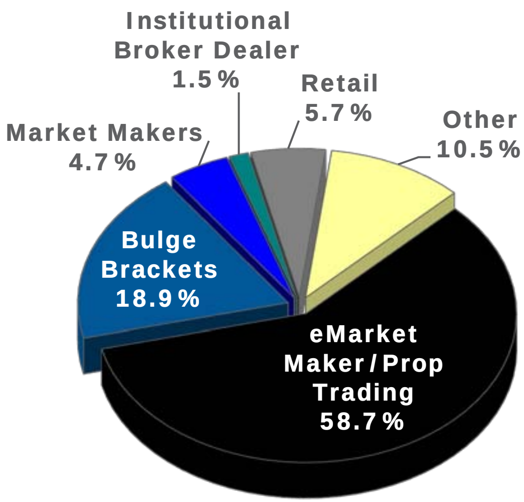
Source: TABB Group

Proximity Services and Co-Location are part of Electronic Trading

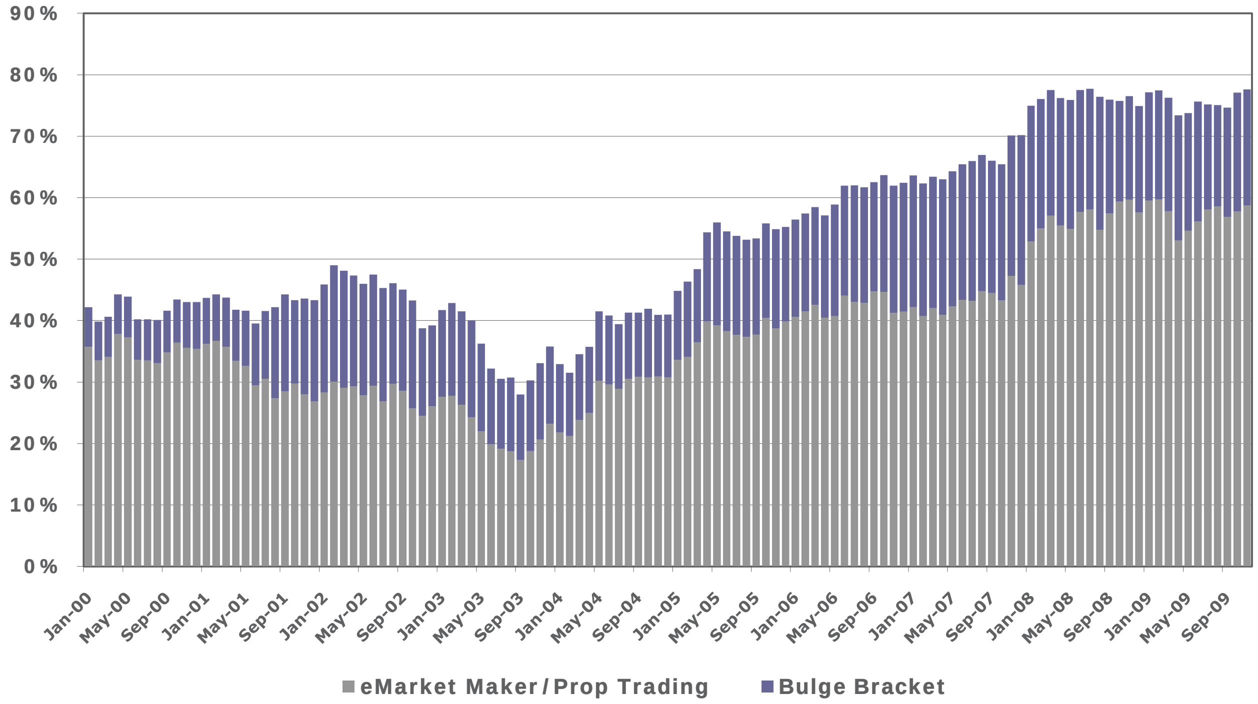
- As electronic traders seek to automate the behavior of human traders there is also a desire to replicate the proximity to the market that was a characteristic of trading floors.
- Provides subscribers with an opportunity to place their own trading systems within the market's facility or to obtain ultra low latency data from the market.
- Allows market participants to reduce message latency and thereby be more effective as market makers.
- Reduces barriers to entry in market making by lowering telecommunication costs and removing the geographical barriers.
- Used by all trading models, particularly latency-sensitive models.
- Open to all NASDAQ U.S. customers (NASDAQ/BX/NOM/PHLX/NFX).

Extent and Growth of Electronic Trading on The NASDAQ Stock Market

- The majority of NASDAQ members use electronic trading
- The majority of NASDAQ matched volume comes from electronic trading



Electronic Trading by Bulge Bracket and e-Market Maker/Proprietary Trading Firms, 2000-2009



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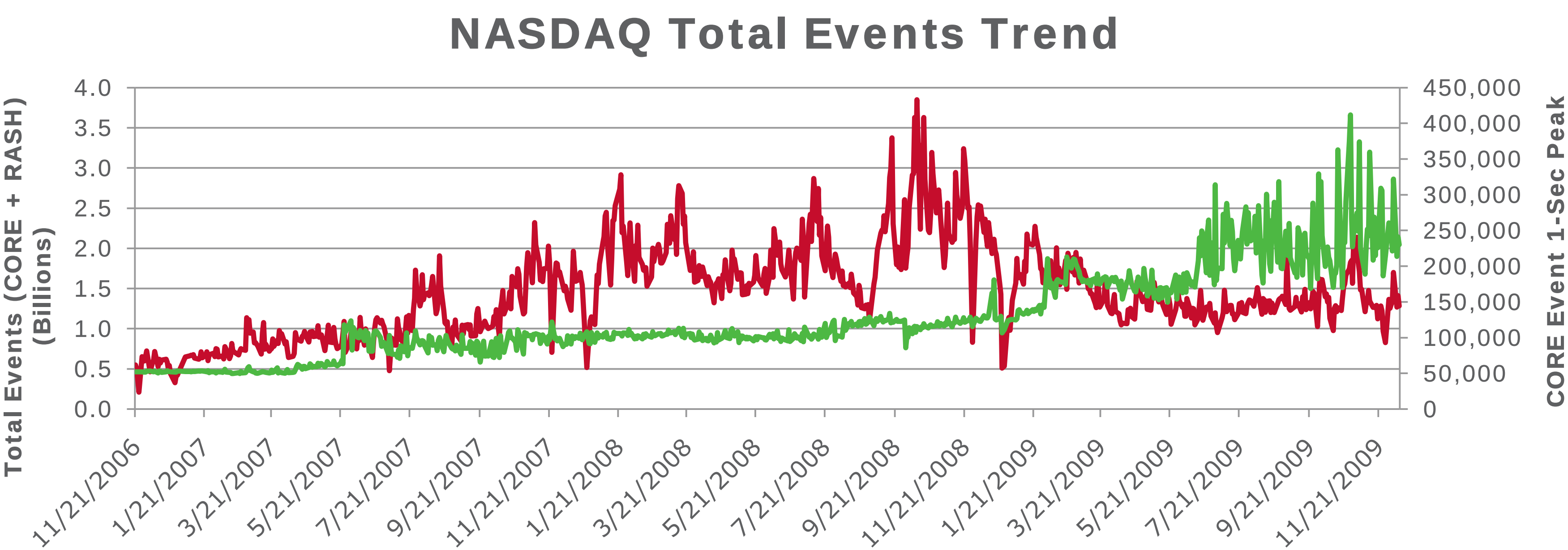
Algorithms Demand Explosive Systems Growth

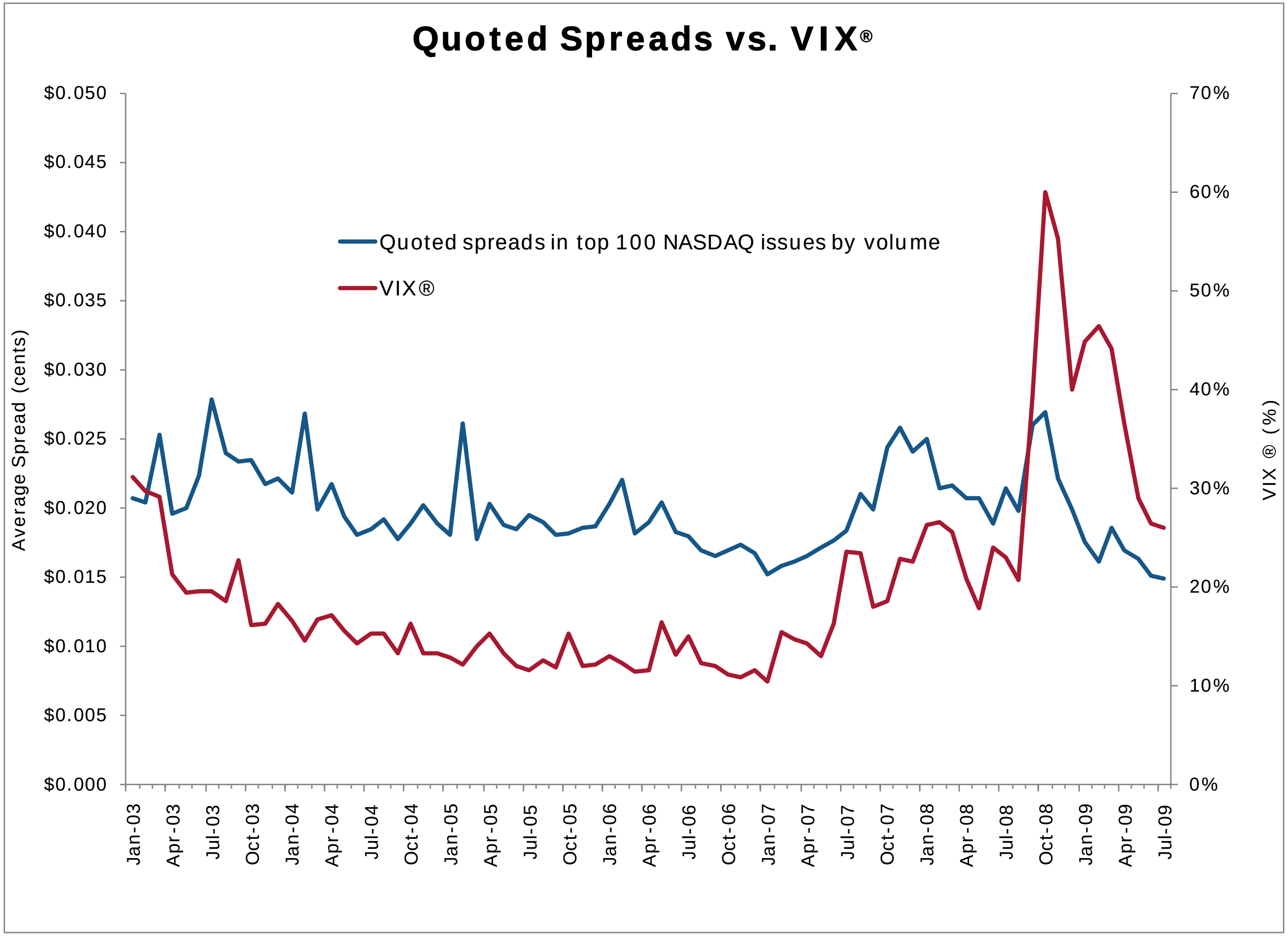
- NASDAQ Market systems continue to accommodate record trading days
- Overall record transaction levels set in 2008 have not been seen again, but system improvements have more than accommodated for the demand for throughput and capacity
  - NASDAQ has continually seen new records set at the one second benchmark.
- NASDAQ Market is designed to handle over 1 million messages per second and routinely handles over 400,000 messages per second



Impacts of Electronic Trading

- There are a number of perceived benefits:
  - Tighter spreads
  - Increased liquidity
  - Faster execution speeds
  - Improved technology across exchanges
  - Reduced transaction fees
- There are also perceived costs:
  - Increasing demands for computer power and network capacity
  - Search for institutional liquidity more challenging

Impact of Electronic Trading: Narrowing of the Quoted Spreads



Source: NASDAQ OMX

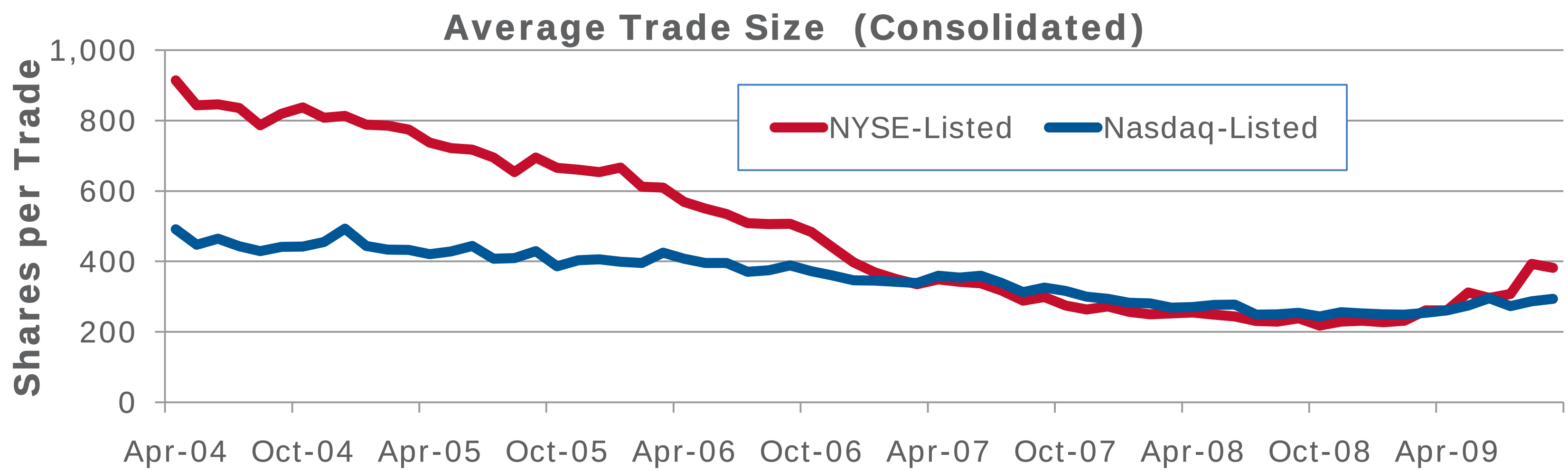
Statistical Summary of NASDAQ Top 20 Trading Firms
Six Electronic Trading Firms, 14 Other Firms

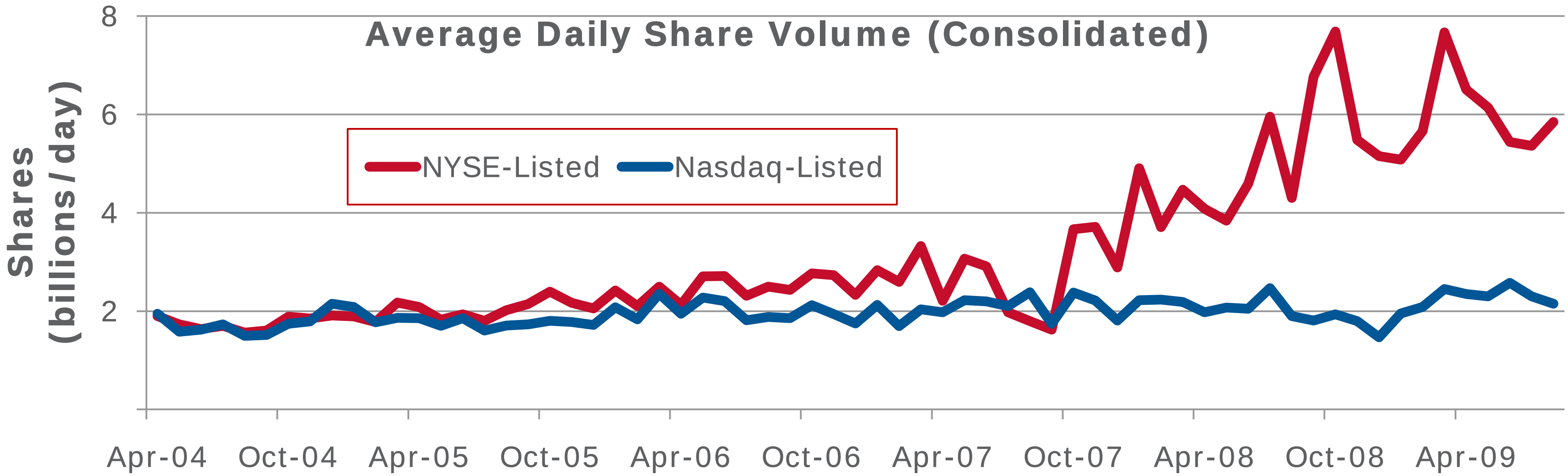
	Average Daily Shares	% of NASDAQ	Liquidity Added %	Trade to Order Ratio	% Orders Entered via Direct Connect	# Switches in Net Position	End-of-Day Net Position	Duration of Canceled Orders (secs)
ET	1,188,702,369	33.2%	53.9%	7.9%	93.3%	18.9	9.0%	0.7
Other	963,083,005	26.9%	50.7%	22.6%	43.5%	4.6	40.7%	18.1

For Electronic Trading:

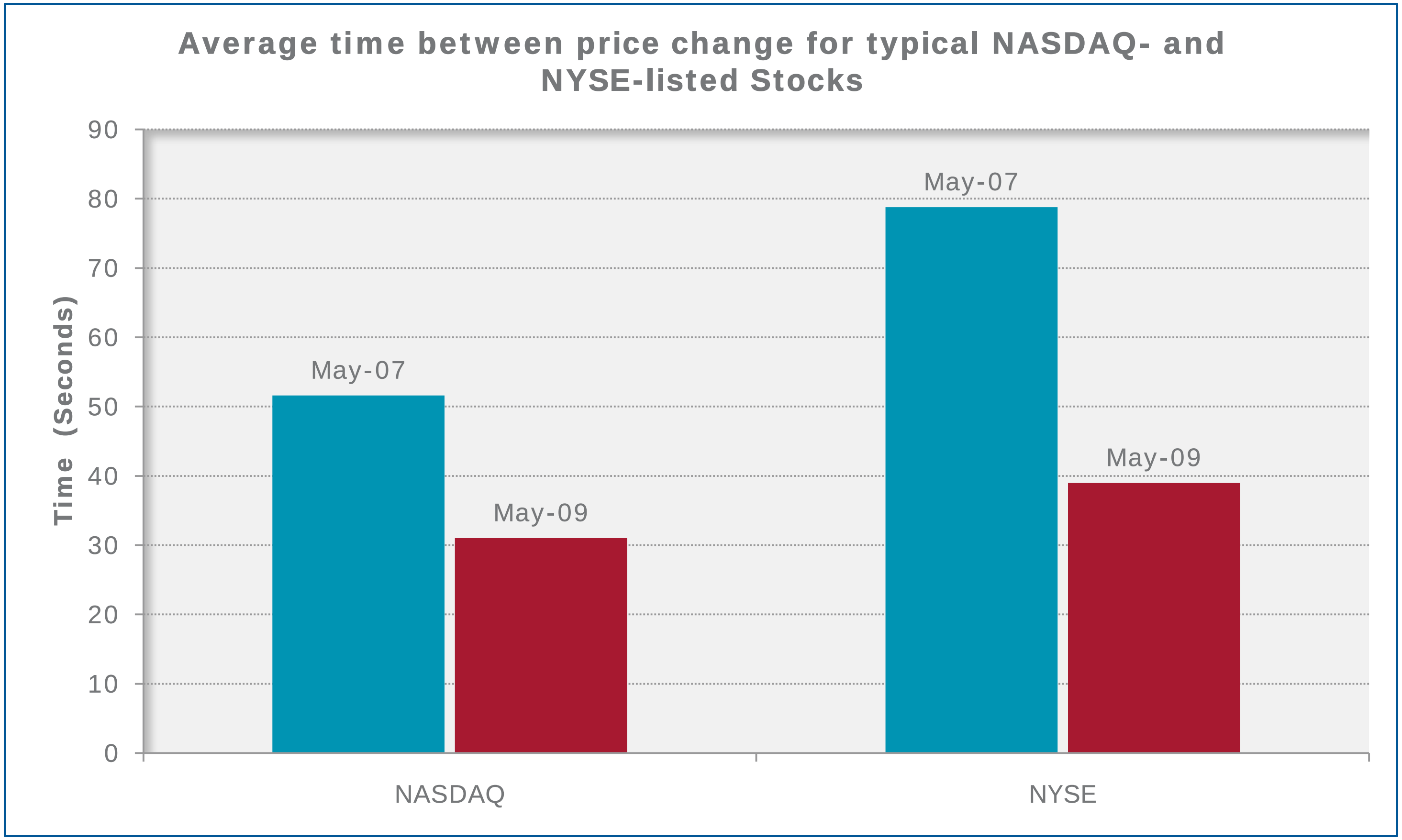
- Lots of Volume
  - Add liquidity as well as take liquidity, depending on strategy
- Lots of Orders Relative to Trades
  - Extensive use of probing orders
  - Posting and rapidly cancelling booked orders
- Extensive use of direct order entry systems (NASDAQ OUCH)
- Don’t accumulate positions, but flip back and forth
- End-of-day positions small relative to volume of trading

Impact of Electronic Trading:
Automated Trading came to NYSE stocks from 2005 to 2007 several years after it came to NASDAQ stocks. We can see the impact by comparing NYSE-listed and NASDAQ-listed stocks.





Impact of Electronic Trading:
How Stable are Quoted Spreads?



Electronic Trading - Regulatory Issues

The Commission is engaged in extensive policy-making to adapt floor-based trading rules to sophisticated electronic trading technology. Issues raised by electronic trading, including co-location, flash orders and sponsored access, are simply the latest iterations of behaviors that have existed for many years.

- ***Co-location*.** The Commission is examining whether "co-location", whereby exchanges permit members to locate their servers in the same facility as exchange servers, provides an unfair trading advantage. The Commission is currently reviewing the co-location fees exchanges assess, and it has announced an upcoming rule-making regarding co-location.

- ***"Flash" Orders.*** On September 23, 2009, the SEC proposed to ban orders that "flash" to certain market participants before being displayed through the public quote stream. The Commission is attempting to define "flash", considering whether to treat equities and options "flashes" equally, and deciding whether to permit any trading that involves either selective or delayed display, such as a single-priced auction.

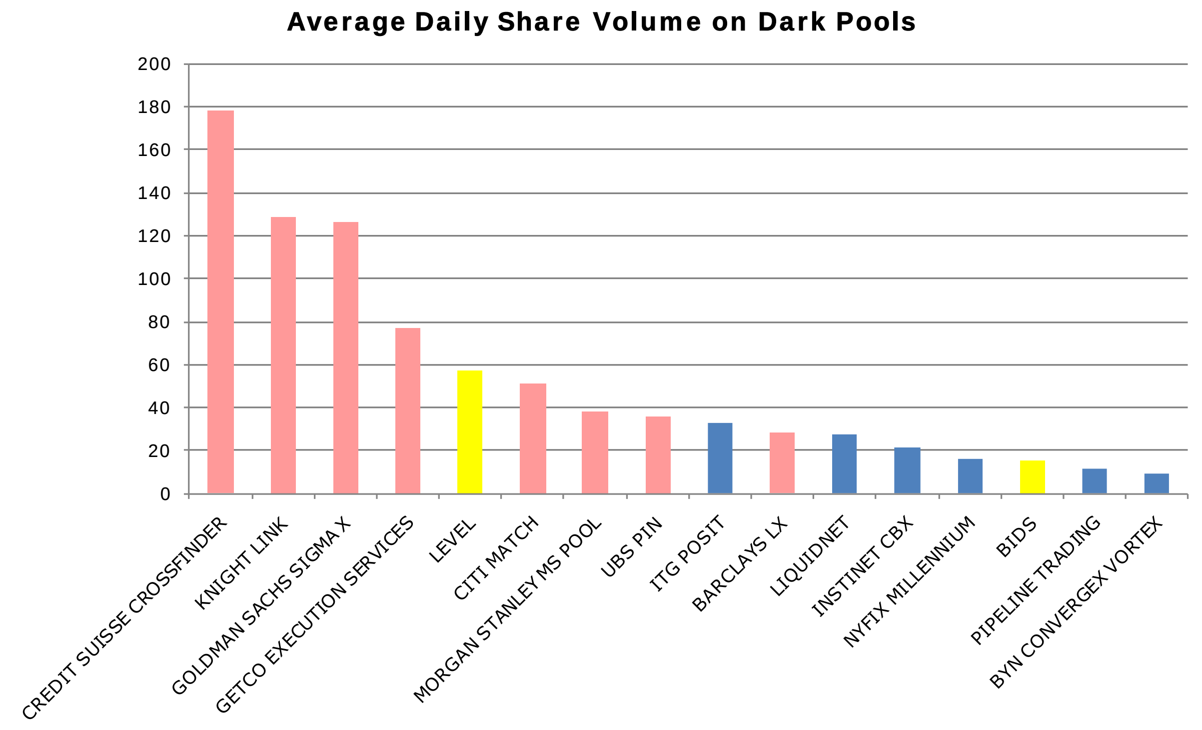
- ***Sponsored Access.*** Firms that trade electronically can enter orders into exchange systems on behalf of non-member firms, an arrangement broadly-known as sponsored access. The Commission is examining whether the sponsoring firms have adequate regulatory and financial controls in place to understand and manage the systemic risk such sponsorship creates.
  - NASDAQ chose to lead by filing a model proposal, SR-NASDAQ-2008-104, containing the complete Commission term sheet of suggested controls. The NASDAQ proposal has completed the notice and comment process, including NASDAQ's response to comment letters. On October 23, 2009, NASDAQ filed Amendment 3 which should be approved shortly. All exchanges will adopt the same rule and implement it at the same time. The Commission staff has agreed to orchestrate an adoption of uniform rules and an orderly implementation.

Dark Pools

- There are many different types of dark pools:
  - Exchange systems, broker operated ATSs, dealer internalization systems
  - Many different trading practices, protocols, and business models
- A common goal is minimizing the price impact of an order
  - No quotes sent to the tape
  - All trades are reported immediately to the tape
- Some send limited pre-trade order information, IOIs, to participants or to the operating dealer
- Some seek to exclude ‘toxic’ traders.
- Dark pools are linking to form a network.

U.S. Trading in Dark Pools

- Dark Pools are 9.2% of equity volume in the U.S.
- Broker-sponsored dark pools (shown in pink) dominate dark pool volume.
- The average trade size for agency block dark pools is around 50,000 shares.
- Algorithm driven dark pools have average trade sizes below 400 shares.



Bars represent adjusted ADV of each pool for October, in millions of shares
Source: Rosenblatt Securities, company data

Sources: Thompson Reuters, Rosenblatt Securities, November 2009

Dark Pools – Regulatory Proposal

- On November 13, 2009, the Commission released a proposal to increase the transparency of “dark pools”. The Proposal closely tracks NASDAQ’s advocacy at the Commission.
- The dark pool proposal seeks to increase transparency and mitigate fragmentation by:
  - (1) treating actionable indications of interest (IOIs) as quotes;
  - (2) lowering from 5% to 0.25% of national trading volume in each stock as the trading volume threshold at which an ATSs are required to display best-priced orders for a stock and provide nondiscriminatory access to such orders to non-subscribers; and
  - (3) mandating real-time post-trade disclosure of the identity of the ATS that executes a trade (trades are currently reported as having been executed “over-the-counter”).
  - Each proposal includes an exception for block-size quotes or trades, *i.e.,* those with an aggregate value exceeding $200,000.
- The proposal does ***not***: (1) limit the size of dark pools that are truly dark, or (2) address Rule 605 statistics.
- Expect more policy-making on dark liquidity. We anticipate a concept release regarding, among other things, all forms of dark liquidity, the order flow arrangements of over-the-counter market makers and non-displayed orders on exchanges.

Regulatory Update – Policy Making

- The SEC is engaged in broad policy making on market structure issues. In addition to addressing “darkening” of public markets due to increased use of dark pools, the SEC is reviewing “flash” orders, proposed amendments to short sale regulations; sponsored access; and upcoming proposals on high frequency trading and co-location.

- While capital markets are in a period of rapid transformation, NASDAQ views market developments as iterations of constant market behavior adapting to new technology. The strength of US markets is the ability of the SEC and market operators to protect investors during periods of stability and of change.

Regulatory Update – Policy Making

- NASDAQ has four priorities in assessing market developments
  - ***Prioritize public markets and public investors.*** The public "lit" markets are the cornerstone of the U.S. financial system and orders should come to the public market for execution to the greatest extent possible. Public markets are essential to investor confidence that our capital markets are fair, robust, and efficient.
  - ***Maximize 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.
  - ***Encourage innovation and competition***. Secondary markets function most efficiently when exchanges and non-exchanges compete to develop the most advanced trading technology to execute trades faster and at 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.
  - ***Guarantee fair and equal access.*** This 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.

Regulatory Update – Short Selling

- Short Selling
  - On July 27, 2009, the Commission adopted as permanent Rule 204 of Regulation SHO which is aimed at reducing "fails to deliver," a key indicator and harm of "naked" short selling.
  - On April 10 and August 19, 2009, the SEC released proposals to re-introduce a price test for orders to sell short national market system securities. The Commission is exploring claims that short selling contributed to the collapse of financial institutions that precipitated the financial system crisis.
    - The proposals include adopting the traditional "tick test" from SEC Rule 10a-1, the "bid" test from former NASDAQ Rule 3350, and various "circuit breakers" that would trigger application of the rule when a significant price change occurs.
    - The Commission is considering whether to offer exemptions from the rule for trading strategies that the Commission views as beneficial to the marketplace.
    - Action on the proposals is expected early in the new year.

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