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ADVISORS, LLC

Presentation to the
Commodity Futures Trading Commission
Technology Advisory Committee

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# Defining "HFT"

- Commissioner O'Malia has proposed a definition of "High Frequency Trading" or "HFT" because:
  - "CFTC needs to collect reliable data so it can define their trading activity before imposing regulations."

- Potential uses of definition:
  - market structure research
  - risk controls
  - surveillance

- Should be neither too broad nor too narrow

- Definition could require arbitrary thresholds
  - "high", "numerous" and "very-short"

Alternative Approach

- A flexible and easy-to-implement proposal

- Define a universe of "Direct ATS Participants" based on:
  - use of Automated Trading System ("ATS") and,
  - direct connection to an exchange

Direct ATS Participants
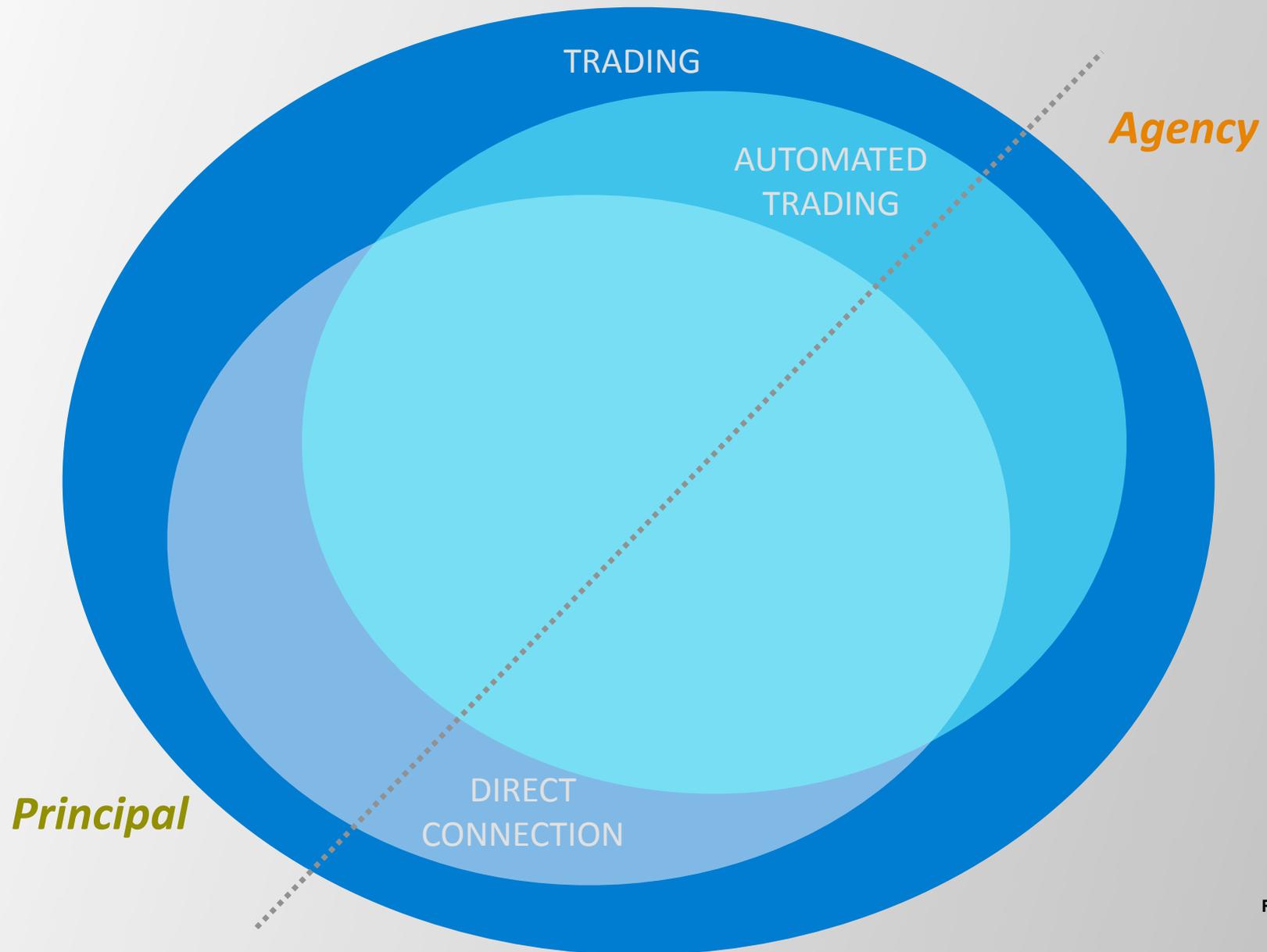
Leverage Existing Resources

- Exchange resources currently exist to study this group
  - complete audit trails of every order and trade
  - Automated Trading System definitions and tags:
    - CME defines as "a system that automates the generation and routing of orders"
    - tag 50 maps to individuals and Automated Trading Systems responsible for order submission
  - exchange membership documents

- Data can be sorted and filtered based on dynamic criteria:
  - order rates, turnover rates, trading frequency, etc.

Benefits

- Direct ATS Participant approach should:
  - avoid need for arbitrary thresholds
  - be available quickly and easily with existing resources
  - provide flexibility for research and surveillance
  - assure that risk controls apply broadly

Context -- Modern Automated Markets

- Nearly all aspects have been automated
  - market data, order entry and trade matching
  - back-office, clearing and settlement

- Have become more transparent and competitive due to regulatory change and technology

- Today, all classes of market participants use computers and automation
  - investment banks, broker-dealers and FCMs
  - investment funds, hedge funds and CTAs
  - independent principal trading firms
  - retail brokers and some retail investors

Modern Professional Trading

- Professional trading has always been important to financial markets, providing **liquidity** and contributing to **price discovery**

- As markets have become electronic, transparent and competitive, most professional trading has been automated

- New market participants (many from outside traditional financial centers) have been able to compete on level playing field

- Improved market quality has saved investors and hedgers billions of dollars

So what do we do?

- People have labeled some automated trading as "high frequency trading" but the term has not been well defined

- What we do is:
  - collect publicly available market data
  - analyze the data using quantitative and statistical approaches
  - form opinions on "fair value"
  - use computers to automatically enter orders to buy and sell
  - do this many times a day across many instruments, and
  - carefully manage risk

- While many of our processes are automated, there are people behind every trade. People design our systems and strategies, program our computers, supervise trading and help manage risk

Market Quality Benefits

- Competition among professional traders with diverse views of fair value improves market quality for investors and hedgers

- According to numerous empirical studies, these benefits include:
  - lower trading costs
  - fairer prices and less micro-volatility
  - more resilient markets
  - increased liquidity

Literature Review

Author (s) / Title	Dataset	Findings
Angel, Harris, Spatt "Equity trading in the 21st century", February 2010	U.S. equities, 1993 – 2009	Trading costs have declined, bid-ask spreads have narrowed and available liquidity has increased
RGM Advisors "Market Efficiency and Microstructure Evolution in US Equity Markets: A High Frequency Perspective", October 2010	U.S. equities, 2006 - 2010	Bid-ask spreads have narrowed, available liquidity has increased and price efficiency has improved
Credit Suisse "Sizing Up US Equity Microstructure", April 2010	U.S. equities, 2003-2010	Bid-ask spreads have narrowed, available liquidity has increased and short-term volatility (normalized by longer term volatility) has declined
Hasbrouck, Saar "Low-Latency Trading", May 2011	U.S. equities, full NASDAQ order book, June 2007 and October 2008	Low latency automated trading was associated with lower quoted and effective spreads, lower volatility and greater liquidity
Hendershott, Riordan "Algorithmic Trading and Information", August 2009	Automated vs. other trades. Deutsche Börse equities, January 2008	Automated trades made prices more efficient and did not contribute to higher volatility
Chaboud, Hjalmarsson, Vega and Chiquoine "Rise of the Machines: Algorithmic Trading in the Foreign Exchange Market", October 2009	Automated vs. other trades. EBS forex market, 2006-2007	Automated trades increased liquidity and may have lowered volatility
Markets Committee, Bank for International Settlements (BIS) "High-frequency trading in the foreign exchange market", September 2011	Various FX venues, notably Reuters and EBS, and various dates, notably May 6, 2010 and March 17, 2011	HFT is found to be beneficial during normal market periods, with similar behavior to traditional market participants during high volatility periods
Brogaard "High frequency trading and its impact on market quality", August 2009	HFT vs. other trades. U.S. equities on Nasdaq, various periods in 2008 – 2010	HFTs helped to narrow bid-ask spreads, improved price discovery and may have reduced volatility
Brogaard "High Frequency Trading and Volatility", October 2011	HFT vs. other trades. U.S. equities on NASDAQ, various periods in 2008 - 2010	HFT activity tends to decrease idiosyncratic and intraday volatility
Hendershott, Riordan "High Frequency Trading and Price Discovery" (working paper)	HFT vs. other trades. U.S equities on NASDAQ, various periods in 2008 - 2010	HFT trades were positively correlated with permanent price changes and negatively correlated with transitory price changes, suggesting that HFT improves price discovery

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Literature Review

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Author (s) / Title	Dataset	Findings
Jarnecic, Snape "An analysis of trades by high frequency participants on the London Stock Exchange", June 2010	HFT vs. other trades. LSE equities, April – June, 2009	HFTs improved liquidity and were unlikely to have increased volatility
CME Group "Algorithmic trading and market dynamics", July 2010	Automated vs. other trades. CME futures, May 2008 – May 2010	Automated trading was associated with improved liquidity and reduced volatility
Menkveld "High Frequency Trading and the New-Market Makers", April 2011	Dutch equities traded on ChiMX and Euronext, 2007	A single high frequency trader played an important role in the development of a competitive market center, resulting in better liquidity and lower trading costs
Lepone "The Impact of High Frequency (HFT): International Evidence". September 2011	HFT vs. other trades. Singapore Exchange (SGX),Australia Securities Exchange (ASX), NASDAQ and London Stock Exchange	HFT has become a major provider of liquidity, particularly during periods of market uncertainty
Hendershott, Jones, Mankveld "Does Algorithmic Trading Improve Liquidity?, 2007	Automated quoting facility, NYSE equities, 2003	Automated trading narrowed bid-ask spreads, lowered trading costs, and improved price efficiency
Riordan, Storkenmairm "Latency, Liquidity and Price Discovery", 2009	Xetra high-speed trading system, Deutsche Börse, 2007	Higher system speeds led to increased liquidity and improved price discovery
Hendershott, Moulton "Automation, Speed and Stock Market Quality: The NYSE's Hybrid", February 2010	NYSE TAQ database plus others, June 1, 2006 - May 31, 2007	Introduction of automation via the NYSE hybrid system improved price discovery and made prices more efficient
Gomber, Arndt, Lutat, Uhle "High-Frequency Trading", March 2011	Various	Survey paper that highlights beneficial aspects of HFT, while noting that perceived problems are largely a result of U.S. market structure

Questions