TAC ATS/HFT Working Group 4 Market Microstructure Issues

RISK MANAGEMENT AND MARKET STRUCTURE

Participants

CFTC

- Andrei Kirilenko
- Richard Haynes
- JonMarc Buffa

Other Contributors

- Zach Ziliak, MayerBrown
- Keith Fishe, TradeForecaster

Subcommittee Members

- Irene Aldridge, ABLE Alpha Trading, LTD,
- Joel Hasbrouk, New York University
- Jordan Lea, American Cotton Shippers Association
- Michael Mendelson, AQR Capital Management LLC
- Peter Reiss, D. E. Shaw Group
- Jitesh Thakkar, Edge Financial Technologies

Introduction

- Better definition of HFT and the cataloguing of its various strategies appear to be helping the financial community and the public understand this activity and areas for additional exploration

- The reliance of both HFT and the large majority of other trading strategies and methods on electronic trading systems and automation is better understood

- The realization of several recent trading disruptions (e.g. Knight, Flash Crash) have highlighted what is perhaps the largest issue with modern trading methods – the possibility that unintended trading destabilizes a market and/or adversely affects many investors or financial institutions

WG4 Task

- While recent events have primarily involved equity markets, it's possible that futures markets could be similarly affected by trading errors

- WG4 believes that the potential for error and abuse by automated trading systems (and all trading systems) is an important issue for regulators, market participants, and the public and that these issues are as important as the debates about good/bad high frequency trading strategies

- We have attempted to analyze these topics from the point of view of their interaction with market structure

Issues Considered

- Availability of studies of trading errors
- Suggestions for handling resting times, and cancellation rates
- Pre-trade risk controls
- Post-trade risk controls
- Testing
- Information Sharing
- National Transportation Safety Board (NTSB)-style investigative body

Data And Analysis Of Automated Trading "Events"

- Additional published analysis of trading errors should be encouraged

- May be useful to have a National Transportation Safety Board (NTSB)-style investigative body to review and facilitate timely sharing of information on unusual market events

- Many events are non-catastrophic and remain under-reported, or at least publicly under-reported

- Academic analysis is difficult because events are generally not publically disclosed and data remains confidential to a trading entity or to regulators

- Basic understanding of errors remains limited. Do errors tend to be caused by faulty data or code? By interactions with third parties?

- Methods to incentivize some form of non-punitive reporting of errors for cataloguing and analysis of frequency and severity could be helpful

Pre-Trade Risk Controls

☐ Pre-trade risk controls are now required in US equity markets. Not yet fully known, and may be difficult to know how effective these are in reducing the most severe errors

☐ Equity markets require (limited) risk checks for all participants, though brokers are allowed to self-check

☐ Recent significant widely known events have originated in broker systems, possibly indicating that self-checking is not adequate

Pre-Trade Risk Controls

- Futures brokers do not face the 15c3-5 requirements of the equity markets, though some offer their clients risk checking capability

- Latency added by risk checking systems can be made very small and we believe that for most liquidity seeking traders, inconsequential

- Incentivizing market entities to perform risk checks in futures markets may be helpful and potentially even more effective than in equities markets, though note risk checks are not a panacea; other controls must be used;
  - Risk checks at the exchange level would likely be most effective

Pre-Trade Risk Controls

- Pre-Trade risk controls should not be considered cost-free for market participants. Latency induced frictions can add trading costs for liquidity demanding investors; this effect may be very small if latency is applied to all participants equally
  - Exchange should expand the pre-trade risk checks available on their systems
  - Exchange based risk checks should be applied equally to all participants including ensuring that they are applied with equal latency for all participants
- Assuming a level playing field, some form of independent risk checking for all participants may reduce the potential for regulatory arbitrage and improve overall effectiveness of pre-trade risk control requirements

Pre-Trade Risk Controls

- It may be useful to realize that substantial trading errors generated in electronic systems can happen in trading systems used brokers and end investors, not just firms specializing in automated trading; all participants need risk controls

- Coding, data, and procedural errors may be more dependent on the trading technology than on the purpose of the trading strategy

Post-Trade Risk Controls

- Post-trade risk controls in the form of drop copies of orders to third parties or brokers can enable useful near real-time risk calculations that cannot be done with ultra low latency pre-trade risk controls
  - Provide an alternative pathway for trade positioning
  - Enable further data gathering for post-event analysis
- May enable reduction of risks created by the separation of executing brokers and clearing broker
- Drop copy reconciliation requirement may encourage best practices

Possible Effects of Certain Risk Controls

- Adding latency and creating minimum resting times on limit orders may impede cross market efficiency and encourage predatory strategies that profit from arbitrage conditions
  - These costs are often passed on by marker makers and borne by non-arb liquidity demanders (i.e. investors)
- Market making risks may rise and liquidity provision re-priced (higher)
- Steps designed to slow markets may have unexpected effects on trading error frequency as orders sensitive to latency have adjusted incentives

Possible Effects of Certain Risk Controls

- The impact of limiting cancellation rates will depend on the level at which they are employed

- Limiting at a level that affects participants with the more extreme ratio of cancels to fills (and some exchanges have put programs in place) will likely have a limited effect on market quality. High cancel rate traders are likely to adapt. At the margin, it is conceivable that some risk would be reduced. It may also reduce the occurrence of "quote stuffing", intentional or otherwise, to the extent that that exists

- Limiting cancel rates at a level that broadly affects automated traders (HFT and others) is likely to increase bid/ask spread and trading costs for liquidity seekers

Testing

- It is possible that code rollouts related to small changes in market structure (e.g. new order types) are particularly risky
  - Many market participants affected simultaneously
  - New trading mechanics potentially never before employed
- Industry groups such as the FIA Principal Traders Group have published recommendations for testing software.

Testing (cont'd)

- We encourage development of more thorough, industry-wide testing procedures
  - Test algorithms in "real life" conditions, including scenario and stress testing (recent weather event gives perspective on how wide these scenarios can be)
- We are not optimistic that regulatory certification of algorithms or testing methods can be practical or effective

Information Sharing

□ Why is this important?

  ■ Recent events in the securities markets have highlighted several areas where improved information sharing among market participants on trading problems or "near misses" could help prevent, troubleshoot and mitigate trading risks.

□ What is the current state?

  ■ Ad hoc communication among market participants during unusual market events;

Information Sharing (cont'd)

- Media reports are often the only place for market participants to glean information about what is going on;

- Post-incident investigations are generally protracted and results are often kept confidential;

- Near misses and smaller incidents are rarely publicized making it very difficult for market participants to get enough information to improve their current risk management practices.

Information Sharing (cont'd)

- Possible next steps:
  - Creation of NTSB-style central clearinghouse or "hotline" to facilitate timely review and sharing of information on unusual market events.
- What not to do:
  - A "gotcha" approach which discourages the kind of sharing and learning that could lead to error reduction going forward.