

## Risk Management and Electronic Trading

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## Humpty Dumpty on Electronic Trading



'When I use a word,' Humpty Dumpty said, in a rather scornful tone, 'it means just what I choose it to mean, neither more nor less.'

'The question is,' said Alice, 'whether you *can* make words mean so many different things.'



OK Humpty, *what is electronic trading?*

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## What is Electronic Trading?

- An STP FIX connected trade to an electronic market for execution
  - An order directly from a buy side OMS
  - Retail or institutional
- A high frequency trading strategy executed autonomously by computer
- *About which are we and the regulators most concerned?*



## High Frequency Strategies

- The Liquidity Algo Trade
  - Break up an institutional sized order and use an automated strategy across multiple market places and over time, to minimize market impact
    - You know the asset, side and size to trade
    - High speed search for liquidity at a price
- The Alpha Algo Trade
  - Implement a strategy using historical models and real time market data, find and exploit profitable trading opportunities – stat arb / pairs trading
    - Do not know in advance the security or timing of the trade
    - Aka black box, quant, etc.



## High Frequency Strategies

- The Market Maker
  - Given a list of securities and a source of order-flow, adhere to the order handling rules and trade at the spread
    - Automate the expertise of a Series 55 licensed trader under all market conditions



## Our Newest Trader?





## Context Determines Risk



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## Context – What Are *Your* Risks?

### Buy Side Client

- Am I using the correct strategy?
- Did I get the trade done at the benchmark cost?



### Algo Vendor – Sell Side Firm or ISV

- Do I have the capacity, speed, reliability to meet my client's needs?
- Does my Algo work as advertised?
- Intraday client exposures



### Market Places

- Do I have the capacity, speed, reliability to meet my client's needs?
- Can an algo roil the market?

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## Sources of Risk

- The **FAT** finger
  - Remember Mizuho
- Market Data – historical and real time
  - Quality and speed (latency)
- Network latency – trading and data
  - LAN and WAN
- Pre-trade process
  - TCA process assumptions
  - Choosing the “right” strategy and parameters
- Executing the strategy
  - Increased volatility, trending markets, news
  - Basket correlations
- Predators sensing your orders
  - Trading “battlebots” earn est. \$15-25B annually



## Technologies at Risk

- The Algo
  - The model’s logic and implementation
  - The historical data to create the model
  - The real time data controlling its execution
- DMA and smart router infrastructure
  - Connectivity, logic, latency
- FIX message correctly representing the algo strategy
  - New order types and market specific orders
  - The market’s trading system correctly interpreting and executing the order



## Responsibilities

- Who is now responsible for *Best Execution*?
  - The buy side trader with DMA and an assortment of algo tools
  - Who's job is it to ensure the algo strategies are correctly understood?
- What responsibilities are taken on by the sell side providing algo's and infrastructure?
  - Are the rules for disaster recovery, losses due to technology related losses clearly understood by all parties?



## Sell Side Risks

- Most risk management systems provide a daily view of client and firm positions
  - Can they respond to high frequency trading?
  - While flat EOD, can intraday positions exceed credit limits?
  - Are clients violating short sale rules?
  - Impact of high frequency trading on firm capital requirements
- Can we stop a client's trading mid strategy???
- Hedge funds using multiple prime brokers hide their strategy and positions
  - What risks are held by prime brokers in the event of a hedge fund failure?
    - Clearance, settlement, loans, etc.
- With buy side firms creating their own algo's, how does their broker handle *Algo's Gone Wild*?



## Regulatory Concerns

- Will Algo trading be the next crash's "portfolio insurance"?
  - Is momentum and alpha trading adding to systemic risk?
- Slicing and dicing further decreasing bid/offer size
  - Reducing liquidity and furthering market fragmentation
- High speed trading increasing quote frequency, flicker and adding noise to price discovery
- Are retail orders being disadvantaged
- Brokers unable to control client trading
  - Potential for market manipulation – it wasn't me it was the algo!
- Complex clearing and settlement



## Canadian Market Regulatory Services (RS)

- Supervision of Algorithmic Trading Jan 18, 2008 Market Integrity Notice
- ...use of an algorithmic trading system and certain limitations on the ability of Market Regulation Services Inc. to intervene to vary or cancel trades arising from a malfunctioning algorithmic trading system.
- ...the source of the order or the means by which an order is entered on a marketplace does not relieve a Participant of responsibility for the supervision of such orders. RS is also of the view that orders entered on a marketplace without the involvement of staff of the Participant, such as in the case of orders transmitted to a marketplace by means of an algorithmic trading system, present heightened risks to both the integrity of the markets and to the financial position of the Participant.
- Participant should develop and implement "fail-safe" mechanisms for the supervision of proprietary algorithmic trading systems that are adequate to prevent the entry of orders and execution of trades that, based on market conditions, are "unreasonable".



## The Future

- More proprietary Algo's
- More complex strategies
- More competition
- More asset classes and cross asset trading
- More electronic market places
- More data
- More speed
- More risk



## Our Panel Discussion With

- Tayloe Draughon, FPL Global Derivatives Co-Chair and Head of E-solutions Product Management, Newedge Group
- Ted Myerson, President, FTEN, Inc
- Greg Tusar, Head of US Electronic Trading, Goldman Sachs
- Joseph Horowitz, Chief Technology Officer, Aegisoft