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Secondary Market Developments: High Frequency and Algorithmic Trading

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IOSCO - SROCC Training Seminar
May 2013

What is algorithmic trading and HFT?



- Automated trading, also known as algorithmic trading, can be defined as the use of computer programs to enter trading orders where the computer algorithmic decides on aspects of execution of the order such as timing, quantity and price of the order. A specific type of automated or algorithmic trading is known as high frequency trading (HFT).
- HFT corresponds to trading activities that employ sophisticated algorithmic technologies to interpret signals from the market and, in response, implement trading strategies that generally involve the high frequency generation of orders and a low latency transmission of these orders to the market. (...) They usually involve the execution of trades on own account (rather than for a client) and positions usually being closed out at the end of the day.

What is algorithmic trading and HFT?



- Specialised forms of high-speed algorithmic trading are emerging - that is, the use of high speed computer programs to generate, route and execute orders. High-frequency trading (HFT) is a subset of this. (...) it is characterized by:
 - a) the generation of large numbers of orders, many of which are cancelled rapidly; and
 - b) typically holding positions for very short time horizons (i.e. ending the day with a zero position).
- HFTs employ high-speed, low-latency technology infrastructures:
 - a) they process direct market feeds to have access to the fastest market information available;
 - b) they co-locate their servers in the data centres with the exchange market's matching engine to reduce access times;
 - c) they develop their own sophisticated trading strategies to trade on a short-term basis; and
 - d) they typically end the trading day with no carry-over positions that use capital.

What is algorithmic trading and HFT?



- The SEC (...) noted that general characteristics often attributed to HFT are:
 - ✓ the use of extraordinarily high-speed and sophisticated computer programs for generating, routing, and executing orders;
 - ✓ the use of co-location services and individual direct data feeds offered by exchanges and others to minimize network and other types of latencies;
 - ✓ very short timeframes for establishing and liquidating positions;
 - ✓ the submission of numerous orders that are cancelled shortly after submission; and
 - ✓ ending the trading day in as close to a flat position as possible (that is, not carrying significant, un-hedged positions over-night).

What is algorithmic trading and HFT?



- A number of common features and trading characteristics related to HFT can be identified:
 - ✓ It involves the use of sophisticated technological tools for pursuing a number of different strategies, ranging from market making to arbitrage;
 - ✓ It is a highly quantitative tool that employs algorithms along the whole investment chain: analysis of market data, deployment of appropriate trading strategies, minimisation of trading costs and execution of trades;
 - ✓ It is characterized by a high daily portfolio turnover and order to trade ratio (i.e. a large number of orders are cancelled in comparison to trades executed);
 - ✓ It usually involves flat or near flat positions at the end of the trading day, meaning that little or no risk is carried overnight (...). Positions are often held for as little as seconds or even fractions of a second;
 - ✓ It is mostly employed by proprietary trading firms or desks; and
 - ✓ It is latency sensitive. The implementation and execution of successful high frequency trading strategies depends crucially on the ability to be faster than competitors and to take advantage of services such as Direct Electronic Access (DEA) and co-location.

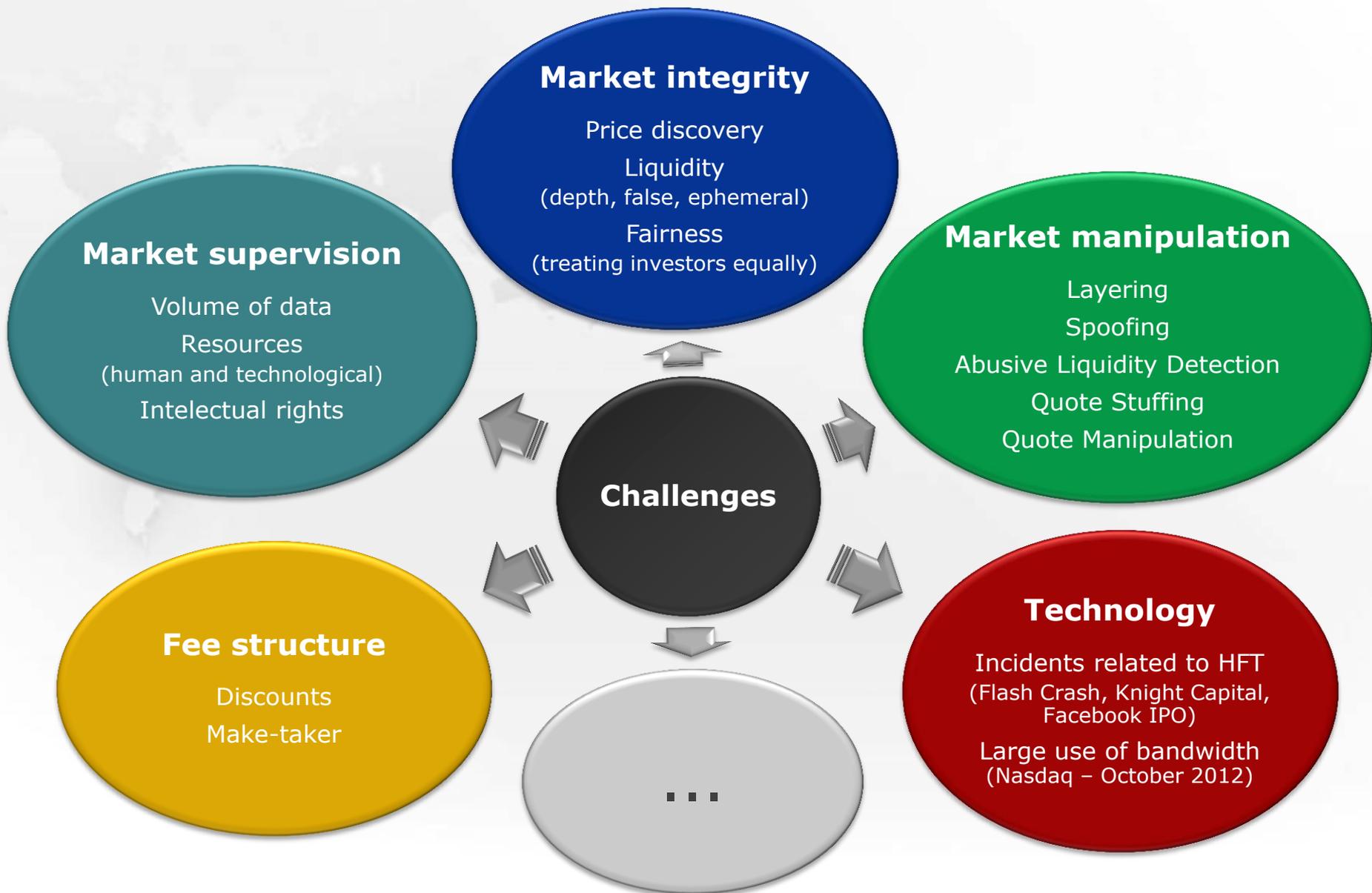
HFT main advantages

- ✓ Reducing spreads
- ✓ Increasing liquidity

HFT main risks

- ✓ "False liquidity"
- ✓ Algotraders disruptions
- ✓ Complexity of supervision

- The HFT industry is under heavy criticism and scrutiny all over the world.
- It is believed by many that operational risks introduced by HFTs are threatening market stability and undermining public confidence in the markets.
- Now almost everybody has an opinion about HFT activity. It is starting to look like ideology.
- Journalists are excited and almost all exchange interviews have HFT as their number one topic.
- Regulators all over the world are united. They have switched into the questionnaire, survey and assessment production mode. Hundreds of round tables, reports and best practices will follow.
- HFT debate has become a political debate.



IOSCO Recommendations



- ✓ Fair, transparent and non-discriminatory access
- ✓ Trading controls mechanisms and robust systems
- ✓ Pre-trade controls
- ✓ Regulators and supervisors should monitor new forms of market abuse

US



- ✓ Improvement of the circuit-breaker mechanism (market-wide and single-stock)
- ✓ Consolidated Audit Trail
- ✓ CFTC and SEC panels to discuss HFT with the industry

Europe (MiFID II)



- ✓ Pre- and post-trade controls
- ✓ Limits on transaction access and intervention
- ✓ Measures to cope with flooding of the order book
- ✓ Prevention of capacity limits from being breached
- ✓ Measures to constrain or halt trading
- ✓ Special attention to market abuse: ping orders, quote stuffing, layering and spoofing

Germany



- ✓ HFT Act expected to enter into force soon
- ✓ Key elements:
 - ✓ Licensing requirement (includes non-German HF Traders)
 - ✓ Minimum Capital of € 730,000
 - ✓ HF-trader subjected to MiFID obligations for investment firms
 - ✓ Information rights for stock exchanges and BaFin regarding trading, systems used, trading, strategies and trading parameters
 - ✓ Stock exchanges and MTFs:
 - ✓ Obligated to include an obligation for trading members to earmark orders from AT
 - ✓ Must use a fee model that charges for excessive use of their systems
 - ✓ Must have "circuit breakers" to ensure orderly trading in case of increased volatility
 - ✓ Participants must maintain an appropriate order/transaction ratio
 - ✓ Definition of market manipulation includes transmission of orders via AT that are not for the purpose of trading

Australia (ASIC)



- ✓ Report on impact of dark liquidity and HFT on market quality and integrity
- ✓ Conclusions:
 - ✓ HFT does not have a significant effect on price formation, liquidity and execution costs
 - ✓ HF Traders reduce their passive liquidity provision during relatively volatile periods, but remain active as liquidity takers
 - ✓ The 'noise' of excess messages and small fleeting orders is disruptive and has damaged investor confidence
 - ✓ ASIC did not find significant or systemic issues regarding predatory trading practices
- ✓ Recommendations:
 - ✓ Minimum resting time of 500 ms for small orders
 - ✓ Issue guidance to participants on excessive order-to-trade ratios
 - ✓ Amendment to ASIC rules to include additional factors to consider when assessing the impact of an order or series of orders
 - ✓ Issue guidance around indicators that may be considered indicative misconduct via AT

Canada



- ✓ Improvement of the market-wide circuit breaker and introduction of the single-stock one
- ✓ Guidance on Certain Manipulative and Deceptive Trading Practices
 - ✓ Layering, Quote Stuffing, Quote Manipulation, spoofing, Abusive Liquidity Detection
- ✓ Increasing the fees charged to firms that flood the market with orders
- ✓ HOT Study: report on trading activity related to HFT in the Canadian equity markets (two phases)
- ✓ Focus on the activity of traders responsible for a high number of orders, compared to the number of trades
- ✓ Third phase will assess the impact of HFT and related activity on Canadian market quality and integrity

Some ideas under debate



- ✓ Order to trade ratio
- ✓ Circuit breakers
- ✓ Rules requiring participant minimum capital
- ✓ Pre trade filters/pre trade controls
- ✓ Post trade monitoring
- ✓ Guidance for testing algorithmic trading and strategies
- ✓ Trading limits
- ✓ Ban on maker-taker fees



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