NASDAQ OMX

30 April 2010

CESR's Call for Evidence on Micro-structural issues of the European equity markets

Reply of NASDAQ OMX

I. High frequency trading (HFT)

Questions:
1. Please describe trading strategies used by high frequency traders and provide examples of how they are implemented.

The main strategy is to benefit from the speed of execution that low latency allows. Basic high frequency trading strategies include:
1. Liquidity provision: An algorithm is designed to act like a market maker, buying on the bid and selling on the ask. It is a passive strategy with no opinion about the outlook for the stock price. Profits result from the spread between the bid and the ask and from liquidity rebates. Losses occur when trading just before an adverse price move.
2. Statistical arbitrage: An algorithm that buy or sell, typically aggressively, in anticipation of price changes in the market or across different markets/venues. It is an active or passive strategy that takes a short term opinion about the outlook for the stock price. Profits are from correctly anticipating price changes. Losses occur from being wrong and from paying the spread and liquidity fees.

The signals to buy or sell may come from the stock, from other assets such as futures, or from news announcements.
These basic high frequency strategies can provide liquidity to the market although the liquidity provision strategy is the most widely thought of as adding liquidity. Furthermore, all strategies contribute to price discovery through the use of computers to estimate the current state of supply and demand for shares.

2. Please provide evidence on the amount of European trading executed by HF traders (including the source(s) of that information). CESR is particularly interested in statistical material on: a) market share of HFT in orders/trades in Q1/2010 (and, if possible compared to 2008 and 2009), b) average trade size in Q1/2010 (and, if possible compared to 2008 and 2009), c) market participants, d) financial instruments traded (including cash vs. derivatives). If possible, please distinguish between HFT on transparent organised trading platforms and on dark pools of liquidity.

It is difficult to identify the exact amount of HFT trading as it would require in-depth information about the broker strategies.

Based on internal data on the Nordic Markets (Stockholm, Helsinki and Copenhagen), NASDAQ OMX believes that the proportion of HFT in total trading is, at present, around 13%. This figure corresponds to volumes reported by all algo accounts. The volume of algo accounts has significantly increased: it has doubled since January 2009. Please see the attached graph.

In the US, different researches on HFT / automated trading volumes gave results ranging from 30% to 70% of trading. Based on internal data, NASDAQ OMX believes that over 50% of

NASDAQ's volumes in the US is solely computer generated and additional volumes are computer managed although originating from a human trading decision.

3. What are the key drivers of HFT, and (if any) limitations to the growth of HFT?

The key driver for HFT is automated trading with a specific emphasis on speed. The main characteristics of HFTs are the quest for lowest latency, i.e. placing a large number of messages in the course of the day at very high speed and have a net zero position at the end of each day. On a general note, HFT firms will use co-location services, or some other low-latency offering, e.g. dark fibre connectivity.

4. In your view, what is the impact of high frequency trading on the market, particularly in relation to:
- market structure (eg. tick sizes);
- liquidity, turnover, bid-offer spreads, market depth;
- volatility and price formation;
- efficiency and orderliness of the market?

HFT does not seem to be the main driver for the reduction of tick sizes. However, HFT may be a market driven reaction to smaller tick sizes as automation is needed to provide efficient, high speed, trading decisions.

Since the extent of HFT is not precisely known, the consequence of HFT on the average transaction size is unclear. It is however likely that HFT has contributed to a reduction of the average transaction size.

If HFT has contributed to narrowing spreads, some also argue that HFT has caused the spread to be more volatile (with prices rapidly changing).

HFT has a positive impact on liquidity. This is evidenced by the increased liquidity when HFTs can access a market and the fact that market operators make systemic changes to accommodate such trading. HFT appears also to have contributed to narrowing spreads although it is very difficult to evidence with statistical data.

We believe that there is nothing intrinsic to HFT that leads to market abuse. Like any other trading activity HFT may involve market abuse when conducted improperly.

Please provide evidence supporting your views on the impact of HFT on the market.

5. What are the key benefits from HFT? Do these benefits exist for all HFT trading strategies?

The main benefits of HFT are the provision of liquidity, narrower spreads, and more efficient price formation, although the evidence for the second two points is not as strong as for the first. As described in reply to the question on strategies, both strategies taken together can produce more efficient and more liquid markets.

6. Do you consider that HFT poses a risk to markets (eg. from an operational or systemic perspective)? In your view, are these risks adequately mitigated?

No, we believe that HFT does not pose a risk to markets. Although some underline that HFT may create a risk from a computer glitch, we believe those risks are general in nature and

adequately mitigated by market operators which scale the capacity of information systems taking HFT into account.

7. Overall, do you consider HFT to be beneficial or detrimental to the markets? Please elaborate.

NASDAQ OMX supports high frequency trading (HFT) as we believe it contributes to improve market liquidity. We have so far no evidence of adverse consequences on the markets we run, both regulated markets in the Nordics and NEURO in London.

8. How do you see HFT developing in Europe?

With the US experience in mind we believe that the potential for further development of HFT is high in Europe although it is difficult to make a specific prediction in this area.

9. Do you consider that additional regulation may be desirable in relation to HF trading/ traders? If so, what kind of regulation would be suitable to address which risks?

Although we welcome regulators' efforts to better understand the various trends in trading activities, we believe that it would not be appropriate to strictly define HFT and design a specific regulation for it. Regulating HFT appears unnecessary at this stage and may hinder the development of liquidity as well as have negative impact on innovation.

CESR would also be interested in receiving analytical studies on the impact of HFT on market efficiency.

II. Sponsored access

Questions:

1. What are the benefits of SA arrangements for trading platforms, sponsoring firms, their clients and the wider market?

The main benefit for the wider market and trading platforms is to increase liquidity and develop volumes. For client, SA provides a more flexible way to access the market and for sponsoring firms SA allows for providing an additional service to clients.

2. What risks does SA pose for the orderly functioning of organised trading platforms? How could these risks be mitigated?

Provided there is pre-trade risk management and the sponsor retains the responsibility of trades, we do not see issues in this respect.

3. What risks does SA pose for sponsoring firms? How should these risks be mitigated?

SA requires firms to adequately risk manage the order flow from clients using the SA service. Mitigation techniques used are mainly filters and limits.

4. Is there a need for additional regulatory requirements for sponsored access, for example:
a. limitations on who can be a sponsoring firm;
b. restrictions on clients that can use sponsored access;
c. additional market monitoring requirements;
d. pre-trade filters and controls on submitted orders.

We have implemented requirements regarding SA arrangements and see no need for additional regulation in this area.

5. Are there other market wide implications resulting from the development of SA?
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III. Co-location

Questions:
1. What are the benefits of co-location services for organised trading platforms, trading participants and clients/investors?

The main benefit of co-location (CL) for organized trading platforms is to enhance the offer of service to its clients/members allowing them to access the markets with the lowest possible latency and ensuring equality of access. For trading participants and clients/investors, the benefit is to take advantage of the lowest possible latency.

2. Are there any downsides arising from the provision of co-location services? If yes, please describe them.

No

3. What impact do co-location services have on trading platforms, participants, and the wider market?

As for sponsored access, the main impact for the wider market and trading platforms is to increase liquidity and develop volumes. For participants, CL provides the ability to access the market more quickly and efficiently.

4. Does the latency benefit for firms using co-location services create any issues for the fairness and efficiency of markets?
CL is available on a non-discretionary basis and provides for equality and neutrality of access (in particular regarding latency). We have no evidence that it can pose risks to the market or market efficiency.

5. In your view, do co-location services create an issue with the MiFID obligations on trading platforms to provide for fair access?

As long as CL is available on a non-discretionary basis and provides for equality and neutrality of access, CL services meet the existing MiFID requirements on fair access.

6. Do you see a need for regulatory action regarding any participants involved in co-location, i.e. firms using this service, markets providing the service and IT providers? Please elaborate.

No, it is the principle of non-discretionary access that should guide the provision of such services. Additional regulation does not seem to be necessary nor for users or providers of such services.

CESR would also be interested in receiving any statistical material on the extent to which co-location services are provided/used in Europe.

14% of members of the Nordic Markets (Stockholm, Helsinki and Copenhagen) use co-location services.

IV. Fee structure

Questions:
1. Please describe the key developments in fee structures used by trading platforms in Europe.

The key developments in fee structures in Europe have been:
- maker/taker are charged different fees, including payment for passive execution or lower fees for those entering orders;
- reduced fees for algo trading;
- lower fees for proprietary trading.

2. What are the benefits of any fee structures that you are aware of?

The main benefit is to attract order flow to ones order book or system. For instance, algorithmic trading using many orders justify lower fees.

3. Are there any downsides to current fee structures and the maker/taker fee structure in particular? If yes, please describe them.

The maker/taker fee structure may affect the execution policy of firms at the expense of best execution for investors.

4. What are the impacts of current fee structures on trading platforms, participants, their trading strategies and the wider market and its efficiency?

The impacts are more competition between trading venues and lower execution fees for market participants.

5. How important is the fee structure of a trading platform in determining whether to connect or not to it for trading. Please elaborate.
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6. Do you consider that the fee structures of trading platforms should be made public to all market participants? Please provide a rationale for your answer.

NASDAQ OMX fees are fully transparent and public, in compliance with the Code of Conduct on clearing and settlement. The same requirements should be imposed on all execution venues including crossing networks.

7. Is there a role for regulators to play in the fee structures? If yes, please describe it.

No. We believe there is no role for the regulators beyond the requirement of transparency. Moreover, already now the competition authorities would be involved in case there would be competition issues.

V. Tick size

Questions:
1. In your view, what has been the impact of smaller tick sizes for equities in Europe on the bid-ask spreads, liquidity, market depth and volatility of these markets? Are there any spill-over effects on derivatives markets?

The agreed reduction of tick sizes that took place in 2009 under the hospices of FESE has lowered the relative quoted spread significantly: in Stockholm and Copenhagen, the initial effect on the relative quoted spread was a reduction of 40-50% and in Helsinki 10-20%. For liquidity and volatility, the correlation with the change of tick size is much more difficult to assess.

2. What are the benefits/downsides of smaller tick size regimes for shares in Europe?

There is an optimal level for tick sizes. A tick size that is too granular is detrimental to market liquidity as it can reduce the volume of shares at each price point and may deter posting of passive orders. A tick size that is too large is suboptimal as it technically prevents spreads from reductions, increasing liquidity costs.

3. Is there a need for greater harmonisation of tick size regimes across Europe? Please elaborate.

For securities that are traded on multiple venues, tick sizes should be harmonized. This includes less liquid securities.

4. Is there a role for regulators to play in the standardisation of tick size regimes or should this be left to market forces?

At this stage, we believe that it should be left to market forces but if it proves not possible to create a harmonized regime, there can be room for regulatory intervention.

5. Have organised markets developed an appropriate approach to tick sizes?

Yes, we believe so. The situation has been significantly improved recently.

6. Should regulators monitor compliance with the self-regulatory initiative of the MTFs and FESE? If this initiative fails, do you see a need for regulators to intervene?

If the market forces' initiative breaks, then we see a need for regulatory intervention.

7. What principles should determine optimal tick sizes?

Share price and liquidity should be taken into account. The higher the share price, the higher the tick size can be. More liquid order book can cope with more granular tick size more easily.

CESR would be particularly interested in receiving information about analytical studies on the impact of the tick size reduction in Europe in recent years beyond the second decimal.

VI. Indications of Interest (IOIs)

Questions:
1. Please provide further information on how IOIs are currently used in European markets by investment firms, MTFs and RMs?

2. Which are the key benefits/downsides of such IOIs? Please provide evidence to support your views.

3. Do you consider that MiFID should be amended to clarify that actionable IOIs should be subject to pre-trade transparency requirements?

Yes we do. This is necessary to ensure a level playing field for all participants.

4. Do you see circumstances where it would be appropriate for IOIs to be provided to a selected group of market participants? Please provide evidence/examples to support your views.

No. This breaks the principle of equal access to market information between participants and would create a two-tier market.

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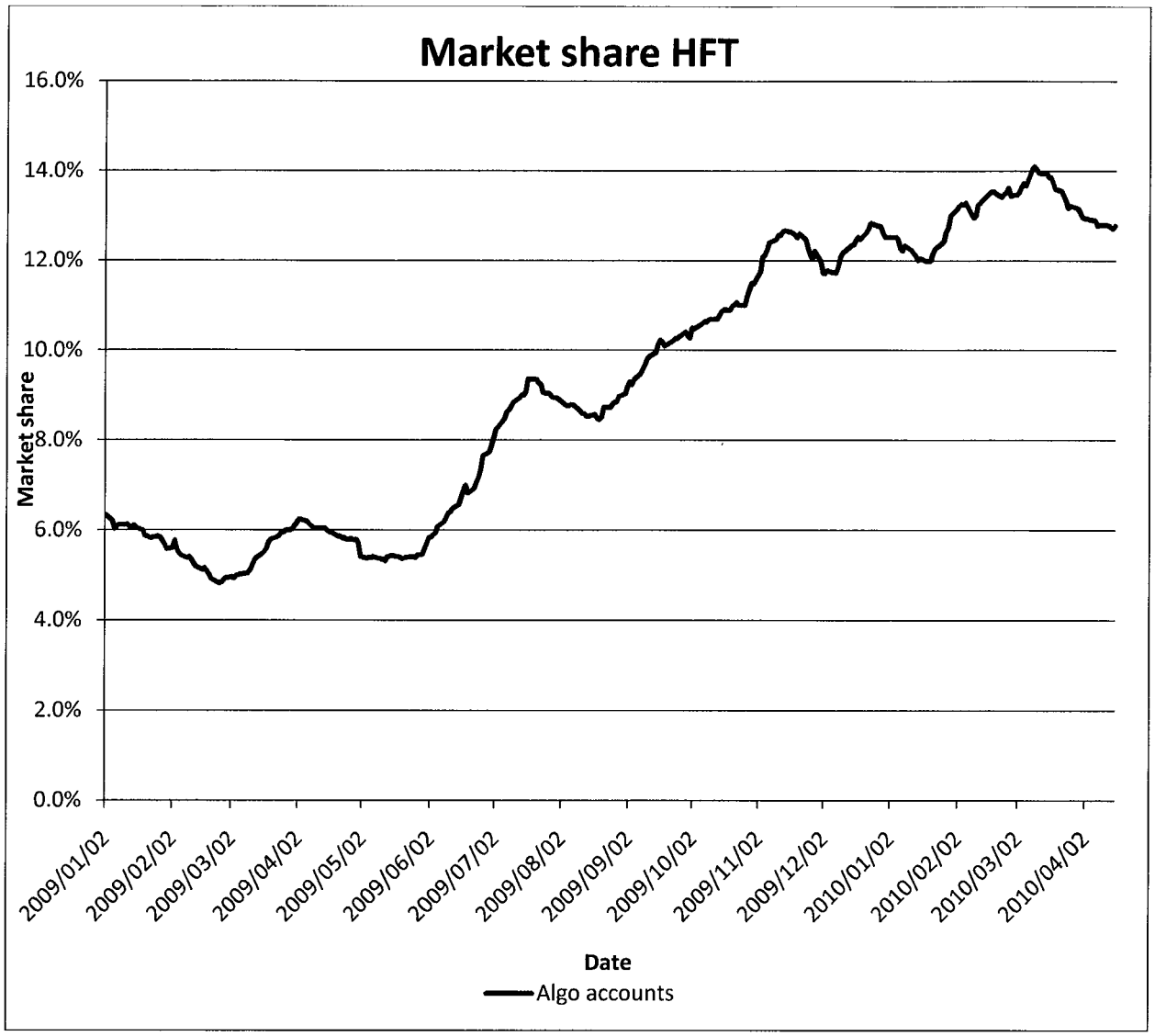
Market share HFT
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
Market share
2009/01/02
2009/02/02
2009/03/02
2009/04/02
2009/05/02
2009/06/02
2009/07/02
2009/08/02
2009/09/02
2009/10/02
2009/11/02
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