23 July 2014

Dear Andrew,

In the Treasury Select Committee session of 15 July on the Bank of England June Financial Stability Report, the issue of high frequency trading (HFT) and dark pools was raised by Mr George Mudie MP, to whom I have copied this letter. As the Governor said, these are very much issues for the FCA and I can assure you that we take the risks posed by both HFT and dark pools very seriously.

We approach risks posed by market activities, like HFT activity, through a blend of: analysis, led policy-making to get the right rules in place; ongoing supervision of the relevant firms and markets; and active market surveillance. The bulk of our policy work now is focused on gearing the UK up for the implementation of the revisions to the Markets in Financial Instruments Directive in two years' time which will bring in a tough package of new measures on both HFT and dark pools. The FCA is playing a leading role in shaping the detailed rules, for example, through our Chairmanship of the ESMA Secondary Markets Standing Committee.

Given the Committee's interest I have put together the attached briefing which I hope addresses the questions raised last Tuesday. It sets out the FCA's work in these areas, both at a UK and an EU level. I hope you find this helpful and I would of course be happy to discuss this with you further.

Yours sincerely,

[Signature]

Martin Wheatley
Chief Executive

cc: Mr George Mudie MP, Dr M. Carney
Financial Conduct Authority overview of Regulation of Dark Pools and High Frequency Trading (HFT)

At the Treasury Select Committee hearing on 15 July, members of the Committee asked Mark Carney and Andrew Bailey about two detailed aspects of market structures: 'dark pools' and 'high-frequency trading' (HFT).

Primary regulatory responsibility for oversight of these two issues rests with the Financial Conduct Authority (FCA).

This note provides some background information on these issues; the main risks the FCA considers may arise in relation to them; and main ways in which we are mitigating those risks. The Committee should note that, although there is some interaction between them, given that it is possible for trading firms utilising HFT to trade via a 'dark pool', these are two different topics, with distinct risks and regulatory implications.

The FCA has discussed these matters with the Bank of England and the PRA, where they may impact on their statutory objectives and responsibilities. We also engage regularly with a range of international regulators on these issues.

'Dark Pools'

1. Defining dark pools

The term “dark pool” does not appear in the FCA Handbook. But it is commonly understood, both in the EU and the US, as an organised system for trading shares where the transactions take place with no pre-trade transparency. In other words, there is no publicly-available information about the prices at which there are intentions to trade (such as quotes, bids and offers). In effect, these systems aim to match two parties who are looking to trade in similar sized transactions with the price of the transaction often determined by reference to another (external) system.

It is important to note that, although there is no pre-trade transparency, transactions executed on these systems are subject to post-trade transparency, i.e. there is a requirement to make public the time, price and volume of each trade after it has been executed.

Under the Markets in Financial Instruments Directive (MiFID - the relevant European legislation in this context) dark pools in shares can be operated either by trading venues (called Regulated Markets and Multilateral Trading Facilities) or as internal matching systems run by an investment firm.

- Under MiFID, all trading venues have to provide pre-trade (and post-trade) transparency in shares admitted to trading on Regulated Markets. However MiFID allows a waiver, subject to regulatory approval, from pre-trade transparency for systems which take their prices directly from other venues. Several UK trading venues operate such systems;
- Investment firms will often send client orders to trading venues for execution. But they can also match the order of one client with the order from another, or they may choose to fill a client from their own (i.e. the investment firm's) account. Some investment firms run internal matching systems (often called broker crossing systems) to provide more automated support of these processes. As long as a number of MiFID provisions are satisfied, these matching systems do not require pre-trade transparency.

A dark pool provides a trading system where shares can be traded without creating a significant market impact on the trade price (because the trade is not disclosed to the market until after it is concluded), including in larger than average trade size, and it offers the possibility for parties to trade within the spread\(^1\) prevailing at transparent trading venues. Such systems and trading venues operating in this way are generally open to all different types of investors, including institutional investors, firms undertaking HFT activity and firms acting on behalf of retail investors.

2. Potential risks raised by dark pools

Dark pools raise two potential risks to the FCA’s objectives.

First, there is a risk to the efficiency of the price formation process. Because there is no pre-trade transparency, orders submitted to dark pools do not contribute directly to price formation - the process through which all the relevant information about a share is incorporated into its price. (Because there is post-trade transparency, information from trades concluded in dark pools does contribute to price formation.) Efficient price formation is a valuable tool to help allocate resources, to price other contracts (e.g. derivatives), and to value assets (e.g. by mutual funds).

The amount of dark trading has increased since the introduction of MiFID in November 2007, although it is comparatively low as a percentage of trading compared to the US. Empirical studies have struggled to find evidence of any consequent deterioration of the price formation process. If the FCA had concerns regarding a significant deterioration of the price formation process as a direct consequence of the use of any MiFID waiver, the FCA could withdraw or suspend the use of the waiver for UK trading venues.

The second risk relates to the conflict of interest between an investment firm's duties towards its clients when acting as a broker and the interests of the investment firm as operator of a dark pool. This risk is not specifically related to the lack of pre-trade transparency in dark pools, but stems from the internalisation of order flow by the investment firm. An investment firm may, for example, have an interest in sending orders to its own dark pool even in circumstances where the client would receive better execution on another trading venue.

\(^1\) The spread is the difference between the prices quoted for an immediate sale (bid) and an immediate purchase (offer). The size of the bid-offer spread in a security is one measure of the liquidity of the market and the size of the transaction cost.
MiFID aims to address the risks related to conflict of interests by requiring investment firms to identify, manage (or prevent), and disclose to clients, the conflict of interests that may damage the interest of the firm’s clients. MiFID also imposes stringent conduct of business obligations, including the obligation to execute orders on terms most favourable to the clients (best execution).

3. FCA supervision and policy

The FCA adopts tailored approaches to the supervision of trading venues and to internal matching systems. Trading venues are supervised as market infrastructures within the FCA’s Markets Division. All trading venues are required to establish transparent and non-discretionary rules and procedures for fair and orderly trading and to establish objective rules and criteria governing access to their facilities. Internal matching systems are addressed within the overall supervisory approach for the investment firm that offers them. Investment firms remain subject to the obligations from client order handling rules and best execution when acting on behalf of a client, e.g. when deciding whether to send an order to its dark pool.

MiFID is currently being revised and a new version of the legislation (MiFID II) will come into effect in January 2017. Under MiFID II, all types of organised multilateral trading will be categorised as a type of trading venue, and therefore subject to regulation as a trading venue, which will include a requirement for pre-trading transparency. Internal matching systems within investment firms will need to be reorganised as one of the specified types of trading venue. Coupled with this, MiFID II will introduce limitations on the use of the pre-trade transparency waivers in the equity markets. After implementation, trading venues operating under certain pre-trade transparency waivers will not be allowed to execute more than 4% of total on-venue trading in that share within the EU. In addition, a pan-European cap will limit total trading in a given share under certain pre-trade transparency waivers to no more than 8% of total on-venue trading of that share in the EU. Inasmuch as dark trading in some shares already exceeds these caps, the implementation of MiFID II will impact dark trading in some shares.

The FCA has supported HM Treasury in European negotiations regarding the MiFID II legislation that has brought about this provision, after agreement was reached in January 2014. The FCA continues to be involved in the development of technical standards through its membership of the European Securities and Markets Authority (ESMA).

High frequency trading

The FSA submitted a written memorandum to the Parliamentary Committee on Banking Standards on high frequency trading and algorithmic trading. The Committee may find that memorandum useful as further background to the material below.

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2 Parliamentary Commission on Banking Standards: Algorithmic Trading (AT) and High Frequency Trading (HFT); Financial Services Authority (FSA) Memorandum
1. Defining high frequency trading

High frequency trading (HFT) is also sometimes called algorithmic trading (AT). Although often used interchangeably, they are related, but distinct concepts. AT is a trading technique that relies on computer programs to generate and execute orders in the markets. AT requires minimal direct intervention by a human operator in placing an order, and this, combined with physical infrastructure designed to minimise messaging delay (latency), allows for fast, low-latency trading in the order of micro-seconds.

HFT is a strategy which relies on the AT technique, in which the low-latency capability of the trade execution process is coupled with a trading style that takes advantage of the capability afforded by a computer to dispatch a large number of trade orders within a set timeframe. The strategy can be characterised by high messaging volumes, frequent order amendments and cancellations, and small order sizes. HFT strategies are used by a wide range of firms, including investment firms as well as some specialised HFT trading firms.

2. Risks raised by HFT

It is accepted that there are benefits to HFT. For example, it provides a link between competition and market efficiency, as well as liquidity from reductions in bid/offer spreads and lower transaction costs. These benefits have been analysed in various official reviews, including the UK Government sponsored Foresight report\(^3\) published in 2012.

To set alongside these benefits, the FCA broadly sees three key risks:

a. **Market efficiency** – the Foresight report concluded that HFT, and computer-based trading more generally, has had several beneficial effects on markets in terms of improving liquidity, reducing transaction costs and augmenting price efficiency. But it also noted concerns relating to market quality, including the greater potential for periodic illiquidity. Some non-HFT participants have anecdotally reported that they are reorganising their trading arrangements to minimise their interaction with HFT firms. Many trading venues also offer premium services to reduce latency. The FCA’s recently published ‘Wholesale Sector Competition Review: Call for Inputs’ is seeking views on whether these arrangements and related issues raise any competition concerns\(^4\).

b. **Market resilience** – it is vital that the trading environment remains robust and resilient in order to ensure that trading venues do not suffer from trading disruptions, system outages or related problems. As trade speeds increase, there is an increased risk that an algorithm that goes “rogue” or unexpected interactions between groups of algorithms may have a detrimental impact on the market for example in what is known as a “flash crash”. The high ratio of orders to trade

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created by HFT has drawn concern that the strategy can strain trading venue resilience.

c. Market cleanliness – market abuse can occur in financial markets irrespective of whether the trading is undertaken by humans or computers. HFT has not, of itself, introduced new types of market abuse. But the FCA recognises the concern that HFT firms may use a speed advantage over other participants to implement abusive strategies.

3. FCA supervision of HFT

To better understand and to tackle these concerns the FCA is taking a three-pronged approach to the potential risks posed by HFT:

• analysis-led policymaking,
• day-to-day supervision of relevant firms and markets, and
• active market surveillance.

a. Analysis-led policy

The primary policy response to the risks around HFT has been developed in Europe. The FCA has played an active role in all elements to-date.

In February 2012, ESMA published the guidelines- detailing expectations around systems and controls for trading venues which permit algorithmic trading and firms using these techniques. The FCA has embedded these guidelines, which amplify the MiFID requirements, into our regulatory framework via our handbook.

MiFID II, to be implemented in 2017, will formalise and strengthen the existing MiFID requirements:

• a number of unregulated firms who use HFT will be brought formally into the scope of regulation, underpinned by a new definition of HFT5;

• to address risks to market resilience, firms will be explicitly required to test algorithms prior to deployment, and trading venues’ approach to circuit breakers (i.e. mechanisms in place that are triggered by pre-defined price movements/behavioural criteria that halt trading) will be subject to an overarching pan-EU requirement;

• to help strengthen the liquidity of markets, HFT firms pursuing market-making strategies will face market-making obligations.

5 Two options have been proposed by ESMA for defining HFT. The first focuses on excessive messaging from firms. Firms sending 75,000 messages on average per day over the course of a calendar year will be classified as HFT. The second focuses on the messaging speed. If the average order lifetime of the firm is lower than the median average order lifetime for the venue, the firm would be classified as HFT. Being classified as HFT will increase record keeping obligations of the firm.
• to avoid disorderly markets, it is also likely that there will be limits on the ratio of unexecuted orders to transactions, and minimum tick sizes - the minimum possible price movement - to counteract venues competing for market share of HFT activity with increasingly granular tick sizes;

• there will also be more data available for regulators. Firms and venues will be required to keep records of transactions. Firms will be required to document their algorithms and record who is the person responsible for them. Trading venues will also be required to publish data on execution quality, for each financial instrument traded.

The MiFID II measures are a wide-reaching package and have been described by Michel Barnier, the EU financial services commissioner, as “the strictest set of regulations for high-frequency trading in the world”.

b. Supervision of relevant firms and markets

HFT activity is present in a variety of firms including proprietary trading firms whose sole focus is HFT, and Investment Banks and Retail Banks who engage in proprietary HFT alongside their various other services and offerings.

HFT activity is supervised by the FCA through our oversight of the participant firms and the trading venues they use. All authorised firms are subject to the FCA supervision model with resources allocated in proportion to the perceived risks to the FCA’s objectives. In line with the FCA’s supervisory approach, all firms are assessed in periodic cycles-based on their size and on risk, with a range of supervisory actions possible including proactive firm visits, “deep dives” on specific activities and thematic cross firm studies.

For firms, such as proprietary trading firms and Investment and Retail Banks, we have conducted or have plans to conduct a number of ‘thematic reviews’ and firm specific “deep dives” to consider elements of HFT activity, such as:

• The risks in designing trading algorithms;
• The potential for conflicts of interest in Smart Order Routing;
• Compliance with the ESMA guidelines on controls in the automated trading environment; and
• The source of data used in HFT in order to test whether there is fair access to information.

The FCA also regulates firms who act as intermediaries to facilitate HFT trading, such as agency brokers and certain Investment banks who offer high speed access to trading venues for HFT clients. Here we seek to ensure these firms have appropriate trade controls for automated trading clients and have suitable surveillance capabilities to monitor clients’ activities for potential abusive behaviour.

c. Active market surveillance.

The FCA is involved in active monitoring of the trading on all UK markets, for all market participants, so as to be able to detect abusive behaviour and take appropriate actions,
Including enforcement. We are liaising closely with supervisory peers within ESMA and with trading venues (which conduct surveillance of the orders and trades that are placed on their markets) to ensure that the arrangements for monitoring markets adapt appropriately to the challenges posed by HFT. Under MiFID II, the FCA and other regulators will have more structured access to order book data from trading venues, in order to reconstruct the events which occurred on the order books when an investigation is necessary. Our supervisory teams work with both firms and trading venues to ensure they have appropriate surveillance of trading activities they undertake, or which they facilitate for others, including HFT firms who access the market through intermediaries. Where firms and trading venues detect suspicious trading activity, we require them to report this to us, where we then follow up and investigate matters using the data we collect.