High-frequency trading

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“Derivatives trading and financial supervision”. That’s the way my speech is announced, but I’m not going to talk about that. I am going to focus on an aspect of it: High Frequency Trading, or, in short, HFT.

What is High Frequency Trading? By HFT, I mean latency sensitive, automated trading activities that make use of advanced IT systems and a highly efficient infrastructure, which, through high speed computations, execute trading strategies with a view to take non-directional (or market neutral) positions with a very short time horizon, often not longer than a few seconds. These positions are hedged and are mostly closed before the end of the trading day. Typically, the majority of orders that are sent to matching engines will not result in a transaction. They will be cancelled and substituted by new updated orders before they can be executed.

1. Introduction

HFT has been the focus of considerable attention lately. This is understandable. High-frequency trading is in many (although not all) respects a new activity, which employs highly sophisticated information technology to trade at speeds and in volumes that not so long ago would have been unimaginable.

While I am aware that high-frequency trading was not responsible for causing the recent financial crisis, the crisis has taught us to be aware of the potential systemic risks that unrestrained financial innovation can pose to the entire financial system. More recently, the flash crash has alerted us to the need to critically assess the robustness of our market structure.

With these considerations in mind, it is understandable that financial regulators, policy makers, the media, and the general public are poring over HFT.

The Netherlands Authority for the Financial Markets, the AFM, is no exception. As the home-supervisor of several of the most active high-frequency trading firms in Europe, we feel a particular responsibility to address the issues surrounding HFT thoroughly, and fairly.

Today, I will briefly highlight our findings and position with regard to HFT and topics associated with it. You will get more or less a ‘sneak preview’ of a report on HFT written by the AFM which will be published shortly.

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2. High level views AFM

To cut to the chase, the AFM sees high-frequency trading not as a strategy in itself, but as a more technically advanced method of implementing particular trading strategies that (for better or worse) have been around for a very long time. Our assessment of HFT, then, is dependent on the nature of these strategies:

As long as these strategies are legitimate, e.g. electronic market making and bona fide statistical arbitrage, we consider them to be activities that should not, in essence, be treated any differently from any other market practice.

On the other hand, where market participants abuse HFT to implement unacceptable trading strategies, such as market manipulation, we see this as illegitimate activity, against which we will bring to bear our enforcement powers. This, of course, requires that we, like other supervisors, need to invest more in our own technical capabilities to address the new challenges to market integrity posed by HFT.

We recognize, of course, that it is not always easy to determine the intentions of traders in the market. There is certainly a "grey" area, which will need to be explored further. This is something we will not only do ourselves, but also in cooperation with our European and international colleagues in CESR and IOSCO.

More generally, we believe that one has to assess the impact of HFT within the context of the structural changes brought about by the MiFID, the Markets in Financial Instruments Directive, which was implemented three years ago:

- The aim of MiFID was increase the efficiency and competiveness of the European capital markets and to facilitate the emergence of an integrated European financial services market. To achieve these goals, MiFID has increased the level of choice for investors by creating a competitive order execution market, most visibly through ending the monopoly of the traditional exchanges, so that they now have to compete with new trading venues (MTFs).
- Under MiFID the number of trading venues has multiplied. For high-frequency traders, the **new** situation created **new** market making and arbitrage opportunities, not in the least because the competition between trading venues forced transaction costs down.
- Thus, we believe the growth of HFT in Europe can to a large extent be explained by the fact that high-frequency traders took legitimate advantage of the opportunities that the new market structure afforded them.
- We believe that the overall assessment of MiFID should be positive, and we see no reason to fundamentally alter the market structure that has been brought into existence. This is an assessment that the other European supervisors, united in CESR (the Committee of European Securities Regulators) and the European Commission share with us.

- For that reason, we may expect that the current market structure will stay with us for a while, and that HFT will remain part of it. Thus, our efforts should not be directed to looking backward but to improve the current market structure.

In that respect, it is important to recognize that HFT has increased the dependency upon advanced and complex technology. For that reason, it is essential that the operational systems and risk functions of traders, brokers, platforms and CCPs are sufficiently robust.

One market participant's operational problems cannot be allowed to lead to a crash of the total market.

To mitigate this risk, one essential step will be to provide additional standards to ensure the proper functioning of the operational systems and risk management functions throughout the trading chain.

We believe that policymakers, supervisors, and legitimate HFT players all have a common interest in increasing the understanding of what is actually happening in the markets and to address in an effective and thorough way any significant risks that are identified.

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3. International process

Like many other challenges in the modern financial marketplace, high-frequency trading calls for an internationally coordinated approach.

The financial markets no longer know any geographical boundaries. Whether a trader sends his orders directly to the marketplace or through a broker, practically any financial instrument listed on any marketplace is within reach. This is also, and perhaps particularly, true of HFT, which is characterized by a high level of globalized activity. Many strategies rely on access to different instruments, listed on alternative platforms. And as profit margins dwindle, the volumes achieved from trading solely in national markets are no longer large **or** attractive enough to sustain the HFT players. Therefore, they are forced to increase their scale of operations and become active across borders.

Whereas trading takes place on a European, or indeed global scale, the monitoring of the markets is still largely organized on a national level. For this reason, I believe that policymakers and regulators will need to be aware of the need for increased regulatory convergence. Furthermore, the international nature of the financial markets means that unilateral, national measures will not be effective and should be avoided. You therefore shouldn't expect the AFM to come up with its own proprietary arsenal of measures and policies.

At the same time, while we should aim for convergence, we also need to recognize that markets are structured differently and that each has its own problems and solutions. To give you an example: it is essential that European regulators closely monitor the American situation. They should assess whether the problems that have occurred **there** could also happen in the EU. However, the market structure in the US is not the same as ours. I name for instance the different nature of the best execution obligation.

Thus, the internationally coordinated approach that we surely need, should recognize the natural shape and size of the problems, and fix them at the appropriate level, be it global or regional.

As to the path forward here in Europe, I believe that CESR in its recent advice to the European Commission on the MiFID-review has struck the right tone in addressing HFT and related issues.

- CESR has advised the Commission that it sees no reason for directly regulating or curtailing HFT. However, it has suggested to the Commission to adjust MiFID in such a way that the new European Securities Markets Authority (ESMA) will be in a position to draft guidelines and binding technical standards that will address the issues of the fairness and orderliness of the markets where these are affected by HFT, sponsored access arrangements, co-location, the fee structures of trading platforms, and tick sizes.
- We will have to await how the Commission will incorporate CESR's advice into its draft for MiFID-2, but the general perception is that the Commission is thinking along comparable lines.

- The AFM fully endorses this approach and will be actively involved with all the work that CESR and ESMA will undertake on these matters.

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4. The presence of high-frequency trading in European markets

Currently, there are no precise, definitive figures on the size of HFT in the European markets. The same is true for other markets, such as in America. The most we can currently say about the scale of HFT in Europe is that it is significant and growing. There is consensus on estimates between 30% and 40%, but these figures are not based on hard facts.

Market participants and trading platform operators tell us that there are several reasons for the present uncertainty:

- The first is that there is no agreement on the definition of HFT. For example, there is widespread confusion between pure high-frequency trading and generic automated trading.
- Secondly, even if we had a consensus definition of HFT, it would still prove very difficult to make a distinction between the different kinds of automatically generated order flow.

    - The total figure on all automated trading lies in the 60 to 70% range, but even the trading platforms themselves have indicated that they do not have a clear picture of what proportion relates to f pure HFT:
    - It is not so difficult (for exchanges) to come up with the exact market share of specialized HFT firms, but such figures have to be adjusted for the market share of the proprietary HFT activity of large investment banks, as well as for the HFT order flow coming through brokers. This order flow may be generated through sponsored access arrangements.

While I am aware of arguments such as these, the absence of unambiguous figures on the market share of a trading activity as important as HFT is unsatisfactory. The widespread speculation about the exact size of HFT indicates that there is a strong desire among market participants and the general public to have more clarity on this matter.

From a regulatory and policy standpoint, in particular, it would also be desirable to have a more accurate picture of the actual size of HFT relative to the total market, as well as the split between the various HFT-strategies.

- The current uncertainty contributes to the secretive aura that surrounds HFT. To many observers it creates the impression that, somehow, there is something amiss with HFT.
- Such feelings may be unwarranted, but they can still adversely affect confidence in the markets.

Also, it makes it more difficult to have a rational and objective policy discussion about HFT itself. More generally, it also clouds the debate on the impact of the changes in the European market structure brought about by MiFID. The growth of HFT is, after all, generally considered to have been facilitated by MiFID.

Given this general desire for more facts, I would like to invite the high-frequency as well as the scientific community to give their views on this issue. I would like to hear how **you** think the current situation can be improved. I am sure that our meeting here today provides a fruitful forum for such a dialogue.

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5. Benefits and risks

Now that HFT has grown to significant proportions in the European market, it is natural and sensible to critically assess its impact. Here, we see both merits and risks. These have to be weighed against each other. Indeed, policymakers are asking questions such as:

- What has HFT brought us in terms of real value creation?
- Do capital markets still serve all market participants in a fair and equal way?

- Is trading on the financial markets still about allocating capital to the place where it can be put to work most efficiently, as it should be?

The AFM recognizes that HFT clearly has merits, although we should obviously distinguish between different forms of HFT.

Firstly, HFT seems to be an important source of liquidity to different trading platforms in the fragmented landscape that has emerged following the implementation of MiFID. For example, bid-ask spreads, which had already been declining before the emergence of HFT as we know it, have continued to decline, thereby further reducing transaction costs per trade.

  - In bringing down the bid-ask spreads, the issue of low latency is of critical importance. The ability to update quotes speedily reduces the electronic market makers' risk of exposure from continually changing market developments and thus allows them to quote more competitive prices.

Liquidity can also be estimated by looking at the order book and the number of orders at different price levels. The development of this liquidity indicator is a source of controversy.

  - Some argue that there are more orders at better price levels than there would have been without HFT.

  - However, the average transaction size has decreased significantly in recent years. Others argue that total trading costs have increased and a large portion of the order book consists of orders that are cancelled **so** quickly that they do not provide real liquidity.

Another positive characteristic that is often attributed to HFT is the increase in the speed of order execution. This minimizes the opportunities for adverse selection by clever traders and reduces opportunity costs.

Price discovery benefits from market participants, who – as high-frequency traders do – quickly detect anomalies in market prices and correct them. This is even more important not that liquidity is fragmented over multiple venues.

Last, but certainly not least, trading fees charged by exchanges have come down across the board. One of the aims of MiFID was to enable competition between multiple trading venues, in order to address the existing monopoly of the traditional exchanges. Many of the new trading platforms in the EU have come to rely on the liquidity provision by HFT players and would probably not have conquered a significant market share without it.

The recent phases of increased volatility in the markets have left many spectators wondering what the role of HFT players has been in the dynamics of market prices. It seems that, even in the most volatile periods of the last two years, HFT market makers have continued quoting prices. They sometimes put their systems on hold whilst they reassessed the situation and widened their spreads, but they did not stop providing liquidity. In many cases there is nothing to prevent market participants from cancelling their orders at will. Would it perhaps be useful to reintroduce the dedicated liquidity providers to our markets?

Soon, there will also be another important issue that we need to consider. Fierce competition forces market participants to continually increase their IT-investments and expand their markets. At the same time, profit margins are shrinking. This may lead to a situation where there will be room for fewer and fewer players. We may need to ask ourselves whether in certain respects the market is becoming over-efficient. My question to you is whether you believe this is indeed the case, and if so, how can we mitigate its potentially adverse impact on the structure of the market.

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6. Behaviour and intentions

As I said at the beginning, we consider HFT to be an instrument that can be used to implement a range of strategies and achieve many different goals; HFT is not a strategy in itself. The trading strategies that are being implemented through algorithms today, were in existence long before the emergence of what we now call HFT. In a way and with all respect, it is like putting new wine into old wineskins:

- Market makers have been quoting prices on exchanges since the development of the option markets in the 70s; now they just do it a lot more quickly across multiple venues.
- Market manipulators were submitting blocking orders long before split-second trading was possible, but ultra-high speed and cross platform operations are now making it more difficult to track their movements.

The distinction between different HFT players with varying strategies is easily blurred, for a variety of causes. Let me name a few.

- The absence of a clear view of what is happening in the markets
- Incidents that lead to a public outcry for immediate measures when there is insufficient time to find the right approach to solving the underlying problems efficiently and effectively
- Market participants who may think they serve their own interests **best** by keeping the nature of their business to themselves, shrouding it under a veil of secrecy.

The AFM monitors the behaviour of high frequency traders, just as it monitors the behaviour of all other market participants. In my view, stigmatization of one group of participants is not the direction we should take. The technological innovations that are driven by HFT activities require a specific approach by regulators. We will have to be committed to making the necessary changes to our current way of supervision, and we need to do that without delay. It is also in the interest of all legitimate market participants for regulators to be able to effectively combat market abuse arising from the speed of HFT activity. In our view, HFT should not be considered synonymous with market abuse. However, we could use some help in making the right distinctions between legitimate and abusive behaviour.

How can we ensure that financial supervisors focus their attention on the right area? For example, should we consider the following distinctions:

- Market makers versus statistical arbitrageurs and other low latency traders?
- **Active traders**, whose aim is to profit from the trading activity itself, and **Passive traders**, who are primarily trying to manage and rebalance a portfolio of financial instruments?
- **Limit orders**, with which traders (in this case liquidity providers) provide other traders with trading options and
  Direct orders, with which traders (in this case liquidity takers) take away trading options from the market?
- Market makers with, and without, an obligation to quote prices under all circumstances?

I wonder what your thoughts are on this.

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7. Co-location

Perhaps one of the most controversial subjects in the whole HFT debate is co-location.

Co-location offers a method for speed-sensitive market participants such as high-frequency traders to reduce their latency.

First of all, let me say that we at the AFM see no role for ourselves in regulating technology, in the sense that we would want to prescribe the speed with which market participants can trade, or to prevent them from reaping the legitimate rewards from their investments in advanced technology.

The investment horizon that a market participant chooses for himself is one of the most fundamental decisions that he has to make. He should have the freedom to do so in a way that fits his needs and competencies, irrespective of whether his investment horizon is measured in years or in seconds.

Still, a question that I would like to pose is, whether you believe an endless rat race for greater and greater speed is desirable. Where, if anywhere, does the turning point lie, where increased speed no longer contributes to a more efficient market but in fact starts working against it?

In the discussion surrounding co-location we have to distinguish between:

a. The latency of the platform itself. This should always be the same for all market participants, irrespective of how they are connected to the platform, so that a non-discretionary matching of buy and sell intentions is assured. This is a basic prerequisite for a fair and orderly market and can never be compromised.

b. The proprietary latency of market participants, which will always differ from participant to participant, and will be dependent upon their needs, their competencies, and their technical and financial capabilities. Whether to invest in optimizing this proprietary latency remains the participant's decision, based on a cost-benefit analysis.

   - In this sense, the option of reducing the distance to the centre of price discovery through co-location is not so different from the old practice of the hoekmannen who used to inhabit this building when it was still a working exchange.

   Having said this, let me be clear that co-location is only acceptable when fair access to facilities is assured. This means that access should be based on non-discretionary, objective, transparent policies and procedures that do not discriminate against one market participant in favour of another. This includes the pricing structure. It also means that potential conflicts of interest are managed effectively (e.g. between co-locating members of a platform, who may also be clients of the platform owners if it is operated by one of more investment firms).

   Another important consideration is that co-location should be available at reasonable commercial cost. This means that providers of co-locations can rightfully demand a rent that reflects the value of these services to the market, but not at a price that is unfair or monopolistic. The emergence of an oligópoly of only a few market participants who could afford access to a co-location would be utterly undesirable, both from a competitive and a systemic risk perspective.

For these reasons, the AFM is closely monitoring the developments and fully participating in the European policy debate regarding co-location.

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8. Sponsored access

Certain firms may not want to be a member of an exchange. We can think of reasons of cost-efficiency or because they cannot meet the requirements, set by the trading platform. For them there is another way to gain direct access to market venues without increasing costly latency, namely sponsored access.

We need to make sure that the controls that are in place to ensure appropriate risk management by members of a trading platform, also apply to firms using sponsored access.

While a firm that offers sponsored access services can determine its own behaviour, it has no control over the behaviour of its clients. The sponsoring member already has a legal obligation to have in place the appropriate pre- and post-trade controls. The sponsoring member should, however, carefully assess whether these controls are able to handle the technological innovations in today's stock markets. If not, then there is an increased chance of error trades and market abuse, and sponsoring members are exposed to large credit risks due to their inability to monitor their own exposure correctly.

New access methods such as co-location and sponsored access also offer food for thought regarding the current regulatory exemptions that MiFID affords proprietary, non-market making trading firms. We will need to reassess whether these exemptions are still justified in the current market environment.

A related matter that we need to address is the issue of clients placing their orders through an intermediary. Regulators often cannot see the identity of firms that make use of sponsored access. We cannot stress this enough: it is important that we see a client's ID; without it we are not able to judge each market participant on his own actions.... and we can call ourselves fortunate knowing that the Dutch Ministry of Finance shares this view.

9. Flash crash

Last week, the American financial regulators (the SEC and CFTC), completed their joint investigation into the causes of the "Flash Crash", the dramatic price volatility on U.S. exchanges that occurred on May 6.

Before the report was published, there had been a general expectation among many observers that high frequency traders would be implicated as the culprits. But while they have played a significant role in the events that led to the stock market singularity on May 6, it seems that they cannot be blamed as the perpetrators. The whole sequence of events was initiated by one institutional investor's automated trading system that did not realize that it was behaving in an irrational and downright dangerous way.

The SEC investigation allows us to draw a few important conclusions:

- We need to widen our focus. If we want to reduce the systemic risk in our modern market systems, we will have to look at all market participants that make use of automated trading systems, not just at high frequency traders. For example, why don't we think about adopting simple, effective standardized risk management rules, for all automated trading systems. A human trader would probably not have made the same mistake that the automated trading system made on May 6; we should consider to introduce a 'sanity check' to our all automated market systems.

- We need to be able to rely on capital markets data under all circumstances. The data need to be accessible, timely and robust and it needs to give a complete picture of everything that is going on in the market. Traders should always be able to quickly reassess the market situation so that they can recalibrate their strategies in a sensible manner. Regulators should be able to investigate swiftly when there is any doubt about the integrity of conduct of certain market participants, or about the causes of extraordinary events.

A differentiated approach to risk management on individual exchanges in the market system can never be enough. We need a system-wide set of measures that does justice to the intertwined nature of our capital markets.

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10. Conclusion

I nearly have reached the end of my speech. Please allow me to summarize a few things.

Not so long ago high-frequency trading was a practice that was largely unknown to most people. However, today it is under the scrutiny of a broad range of market participants, the regulatory community, politicians, the media, and the general public.

This interest has one common denominator: there is a genuine desire to really understand what high-frequency traders are doing, and how their activities impact on the global financial markets.

As I see it, this poses a challenge for high-frequency traders to better explain themselves. I am aware that several high-frequency trading firms, Dutch ones among them, have already accepted this challenge. I highly commend them for this, but I believe that more can be done.

I will try to explain what I mean.

A thriving market needs the confidence of all participants in its basic fairness and orderliness. As relatively new players, who engage in sophisticated, but complex, activities, high-frequency traders have a responsibility to signal to the market as a whole that their contribution is indeed a positive one.

In other words, the burden of proof lies with them to convince other market participants, as well as the regulators, that they pose no threat to confidence in the markets. This means that they will have to do a better job in making clear that :

- that their activities do not involve market abuse and that they have real trading intentions under all circumstances
- that they maintain the resilience of their operational systems under all circumstances; and
- their risk management is of the highest possible standard so that “rogue algorithms” cannot play havoc in the markets, under any circumstances .

Of course, there is a role here in one way or another for the entire trading chain, including platforms, clearing and settlement parties, and other service providers, but I am focusing here in particular on the traders themselves.

I would like to underline that living up to such high standards of transparency has a positive flipside for high-frequency traders: it allows regulators and policy makers to gain an **objective** opinion on their activities. This, in turn, allows them to base any measures that may be needed to reduce risks and/or deficiencies in the current market on rational and unbiased grounds, rather than on populist sentiment.

I, for one, can assure you that we at the AFM have no intention of strangling any legitimate business that offers a constructive contribution to the quality of the market, irrespective of their investment horizon or the technology they employ. This will also be our position in the international policy arena.

As financial regulators we need to ensure a robust and efficient market system that supports economic development by offering a ready source of capital for the real economy. An efficient and vibrant market needs a diverse mixture of participants, large and small, each with its own investment horizon, and each contributing in its own way to the efficient production and consumption of abundant liquidity.

In my view, high-frequency trading can and should be part of this mixture, provided that its practitioners assume the responsibilities that come with their increasingly important role in the markets.

For that reason, my message to the high-frequency trading community is:

- make sure that your trading practices are up to the highest standards of integrity and robustness;
- make sure that what you do and how you do it is transparent , thus helping to sustain confidence in our financial markets;
- make sure that policymakers and regulators do not have to step in to take draconian measures that benefit no one.

In other words: make sure that you don’t become a scapegoat where you do not need to be one.

Thank you very much for listening.
I hope we will have a fruitful debate.