

## Tackling Challenges of High Frequency Trading through MIFID II



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**R**egulating High Frequency Trading (HFT) market is difficult and costly. In this fast evolving financial market segment, the major competitive advantage is the speed of execution and innovation. MiFID II is one of the first attempts at regulating HFTs with requirement to disclose trading strategy and continuous price making. Opinions among experts on the suggested approach are already divided with some predicting little or no benefit to the market.

This paper explains what HFT and Algorithmic Trading (AT) are and how MiFID II is aiming to address potential systemic risk and market abuse.

### High Frequency Trading

Advancement in processing large sets of data in minimum possible time has caused financial markets to adopt new strategies and faster ways to assess and act on available information. This investment discipline is called High Frequency Trading (“HFT”). HFTs should not be confused with other forms of electronic trading such as:

- Systematic trading transactions based on computer generated code with little human intervention
- Electronic trading carried out by humans over a computer terminal

Irene Aldridge in her book on HFT summarizes it as:

*“The main innovation that separates high-frequency from low-frequency trading is a high turnover of capital in rapid computer-driven responses to changing market conditions. High-frequency trading strategies are characterized by a higher number of trades and a lower average gain per trade... with few positions carried overnight.”*

HFTs generally complete round of trades in less than a second based on statistical arbitrage strategies which identify inefficiencies in prices within and across the markets. HFTs comprise of 2 components:

- I. Automated Buy Sell generator which scans markets, identifying price inefficiencies and generating buy or sell signals, and
- II. Algorithmic Trading (“AT”) which is auto order execution component of an HFT. AT is pre-programmed to execute trades with variables of timing, price (limit or market), quantity (small or large) or location of order. These days almost all the market participants use ATs for optimal execution.

According to Aite Group survey (<http://www.aitegroup.com/report/high-frequency-trading-futures-markets>), it is expected that 40% of all futures market activity will be HFT by 2015.

### Regulators Concern

High Frequency Trading (HFT) and Algorithmic Trading (AT) have caused much debate among public, regulators and practitioners with widely differing views about the role and practices of HFT in the market. According to practitioners, HFTs provide a diversified asset class and liquidity to the market, whereas public and regulators have accused them of causing crashes and market manipulation.

There have been some instances in the past (6 May 2010) when it was widely believed that HFTs triggered sales signals causing market to crash by 1000 points in minutes. However, after 5 months of review by Securities and Exchange Commission and CFTC, it was concluded that crash was initiated due to sale of 75,000 E-Mini S&P in highly volatile and thin market conditions causing a sales trigger across the market. It must be noted, that HFTs did contribute to the volatility of the market at the time. In another instance, a firm named Trillium Trading was found guilty of quote stuffing or layering (FINRA 2010). Layering means placing buy or sell orders in a manner to move market in a certain pre-defined direction and take advantage of resulting price inefficiency.

MiFID II is aimed at preventing situations similar to the ones mentioned above.

### MiFID II and Expert Opinion on its Requirements

Under MiFID II, regulators have imposed various new requirements on HFTs and ATs. These new requirements, along with the key findings of Foresight project<sup>1</sup> in the UK, are summarized below:

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<sup>1</sup> Economic impact assessments on MiFID II policy measures by Foresight, Government Office for Science

## 1 Notification of strategy to regulators

### Requirement

Under Article 17 (1), (2), investment firms running an AT to notify resilient, sufficient capacity, risk and controls, test results, business continuity arrangements to regulators on a regular ad-hoc basis.

### What it means

Share with regulators the code, class libraries, class structure, hardware for speedy delivery of order, artificial intelligence functionality etc. with details on how the code evolves as market changes.

### Likely Cost / Benefit

**Cost:** Euro 1 Billion per year since substantial coding and market expertise will be required by regulators to assess and monitor such complex codes. Therefore, intellectual property of algorithmic firm can potentially become known to other market participants.

**Benefit:** It is not clear how the market will benefit from this requirement.

## 2 Circuit Breakers

### Requirement

Under Article 48 (6) regulated markets should be able to temporarily halt trading if a significant price movement in a financial instrument occurs over a short period of time.

### What it means

Varying functionality circuit breakers exist in markets and the likely best role model is CME Forward looking circuit breaker which anticipates price crash based on outstanding orders.

### Likely Cost / Benefit

**Cost:** It is not known what sort of circuit breaker will be mandated and hence it is not possible to approximate a cost.

**Benefit:** Circuit breakers have mixed empirical results. Most of the studies published so far relate to traditional trading and hence it is harder to comment what benefit will be achieved by introducing HFT circuit breakers.

## 3 Minimum Tick Size

### Requirement

Under article 48 (6) minimum tick size requirements to be imposed by Regulated Markets on HFTs.

### What it means

Balance between liquidity and transaction costs (larger tick size equates to higher transaction costs and lower

liquidity cost). There is an agreement through Federation of European Securities Exchanges (FESE) to harmonise and simplify the tick size regimes across their members.

### Likely Cost / Benefit

**Cost:** setting too large a tick size will increase transaction costs and it is hard to approximate the cost at this stage without knowing the tick size.

**Benefit:** There is a need for coherent and optimal tick size policy to reduce complexity in trading technology. This will reduce unnecessary competition and improve liquidity.

## 4 Continuous Market Making

### Requirement

Under Article 17(3) HFT market makers are obligated to provide continuous bid and offer prices during normal trading hours. This requirement already exists for traditional market makers.

### What it means

Among the various obligations being considered are: maximum spread restrictions; percentage time for quotes to be at the inside spread; minimum quoted size; and minimum quote time. It is thought that this requirement will be only applied to HFT systems that operate on maker-taker trading venues and for which more than 50%, or a majority, of the system orders/trades qualify for maker discount/rebates.

### Likely Cost / Benefit

**Costs:** Less number of market makers will mean less liquidity for already illiquid instruments and firms with smaller capital will not be able to act as HFT market makers due to increased bankruptcy risk in times of stress. An incentive should be introduced to compensate for higher risk.

**Benefits:** Continuous liquidity requirement will mean that HFT firms with better execution speed than other market participants will not be able to front run large orders

## 5 Upper Limit on Order to Trade Ratio

### Requirement

Under Article 48 (6) regulated markets are required to implement Order-to-execution ratio limits in order to slow down the order flow if it reaches system limit.

### What it means

The difficulty lies in setting an optimal upper limit for order-to-execution since it may affect the liquidity in the market.

### Likely Cost / Benefit

**Costs:** Transaction costs may increase due to either charge on transactions or limit ratio.

**Benefits:** Receiving, storing and handling orders is expensive and this practice is likely to benefit market makers, exchanges. Also there will be a more predictable limit order book.

## Other Approaches to Regulate AT and HFT

Given the complexity, speed of change and first attempt at regulating HFT and ATs, we see a divergent approach being employed on regulatory oversight of HFT.

- In Germany, HFTs have to be licensed from 15 May 2013 under High Frequency Trading Act, which has similar requirements as MiFID II with properly configured systems, adequate order to execution ratio with fees for excessive use of HFT (same as in MiFID II) and circuit breakers among other requirements.
- Under Italian Financial Transaction Tax, HFTs are subject to 0.02% tax on trades occurring every 0.5 seconds or faster. The market volume has reduced by 10% since the levy of tax. Similar effect has been observed in France who has a similar tax regime.
- UK and Australia has carried out extensive study on impact of HFT on the market disruption, liquidity and volatility. UK study identified four benefits of HFT: liquidity, reduced volatility, price discovery, reduced transaction costs. While Australia did notice incidences of market manipulation involving layering and quote stuffing however it is not a key driver of changes seen in price formation, liquidity and execution costs.
- On the other side of the pond, the US regulatory focus has been on identification of instances of market manipulation through FBI and there was a detailed 2 year study conducted by Commodities Futures Trading Commission (CFTC) to conclude that although risk is lower in HFTs (4.3 Sharpe Ratio) as compared to traditional traders, the returns are skewed to a fewer market leading firms who have the best speed to execute an order.

## Conclusion

Whilst the industry is faced with higher scrutiny and regulation, advancements in technology is increasingly a source of growth and development in financial sector. Therefore regulators are presented with a tough

challenge: how to maintain the integrity of markets while at the same time, not impeding advances in the development of markets. The divergent global regulatory responses to HFT have revealed a lack of consensus and underlined uncertainty surrounding the way forward.

October 2014

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