

ESRB response to the ESMA Consultation paper on “Guidelines on systems and controls in a highly automated trading environment for trading platforms, investment firms and competent authorities”

The ESRB responds herewith to the ESMA Consultation paper on “Guidelines on systems and controls in a highly automated trading environment for trading platforms, investment firms and competent authorities”, which is a welcome contribution to increase the robustness of financial infrastructure at the EU-wide level, following best international standards.

As also mentioned in the ESMA Consultation Paper, the ESRB stresses that the forthcoming review by the EU legislator of the Markets in Financial Directive (MiFID) might require a further review of the policy issues concerning algorithmic and high-frequency trading¹ (AT/HFT), dealt with in the present Consultation paper. Conversely, the proposed development of guidelines by the ESMA should contribute to clarifying the necessary technical issues that will be of particular relevance in the context of the finalisation of the MiFID review.

Well acknowledging that the Consultation paper is an integral part of the ESMA’s work on micro-structural issues, the ESRB would like to draw attention to the possible macroprudential aspects of algorithmic and high frequency trading. The ESRB has therefore drafted its response from a macro-prudential angle, thereby also limiting itself to those aspects which are relevant to the ESRB mandate: to considering whether systemic risks could be originated by developments in this area, and how they could be prevented or mitigated through appropriate measures.

From a macroprudential angle two types of concerns need to be further studied: (i) a potential detrimental impact on liquidity, and (ii) a possible amplifying impact on market shocks. A few preliminary proposals on how ESMA might wish to address these concerns are listed in Box 1 and Box 2 below, respectively.

The ESRB is at the disposal of the ESMA for any future cooperation on these issues.

1. Introduction

Financial markets play a key role in the provision of financial services to the real economy (matching suppliers of savings/capital with real-economy users of capital; risk sharing; price discovery). The ESRB views that confidence in and the integrity and stability of markets are fundamental in ensuring sustainability of this function. The ESRB acknowledges that financial

¹ High-Frequency Trading is understood as a subset of Algorithmic Trading. It designates trading conducted on own account by specialised firms or by dual-capacity traders (broker-dealers), which use strategies drawing profit from potentially small and/or short lived price discrepancies.



innovation and technological advances have contributed to the ability of financial markets to carry out these functions. Nonetheless, structural changes need to be understood and monitored carefully for any unintended consequences as the last financial crisis has shown that unrestrained financial innovation can pose a systemic risk to the stability of the financial system and therefore has an impact on the internal market and the real economy. From a system-wide perspective, it is important that perceived short-term gains are not sought at the expense of long-term stability. Finally, the ESRB takes note that high frequency trading (HFT) represents a significant share of trading in US equities (56%, 2010 Tabb Group/IOSCO) and European equities (38% 2010). HFT also has a growing presence in other markets, including FX and fixed income markets.

Against this background, the ESRB welcomes the proposed ESMA guidelines covering organisational requirements for the electronic trading systems of regulated markets, multilateral trading facilities, and investment firms in relation to highly automated trading (Guidelines No. 1, and No. 2). It also supports the guidelines proposed by ESMA to strengthen the organisational requirements for trading platforms and investment firms to ensure fair and orderly trading (Guidelines 3 and 4).

The ESRB responds in particular to two questions raised by the ESMA Consultation paper: question 7 and question 13.

Q7. Do you have additional comments on the draft guidelines on organisational requirements for investment firms' electronic trading systems?

Q13. Do you have additional comments on the draft guidelines on organisational requirements for investment firms to promote fair and orderly trading?

2. Macroprudential aspects

a) Impact on liquidity and price discovery

The ESRB would like to draw the attention of ESMA to the potential detrimental impact which HFT might have on market liquidity and price discovery, with possible repercussions on the orderly functioning of financial markets and, more broadly, on the real economy.

To date, the empirical evidence on the effects of HFT on liquidity and price discovery is mixed, with some studies of equities markets showing that HFT has contributed to lower bid-ask spreads, and lower intraday price volatility, both indicative of a liquid market. HFTs are said to add liquidity to the market, partly because they have directly added to the size of trading, and partly because they act as informal market makers, having a continuous presence as both buyers and sellers. At the same time, the data show that average trade sizes have declined, making it relatively more difficult for large orders to be executed. There is also evidence that HFTs use their speed to cancel a large fraction of their orders, thus



creating an illusion of a market which is more liquid than it actually is. This latter aspect is – from a macroprudential point of view – a source of specific concern.

It should therefore be recognised that several aspects of the role of HFT on the markets would need further consideration and study by regulators. On the one hand HFTs often aim at holding relatively small inventories, close positions often daily, and some have relatively low capital to support their trading activities. On the other hand, there is limited knowledge of how HFT strategies impact market liquidity and efficiency. It is also unclear to what extent the growing presence of HFTs, which do not formally assume market-making obligations, impacts the presence of traditional market makers and to what extent market access technology costs increase the concentration of liquidity provision to a small number of highly specialized firms.

More specifically, their role during periods of market turbulence may not be well understood. On the one hand, there is a concern that HFTs may withdraw during periods of market stress and/or exacerbate any market imbalances by concentrating on one side of the market. For example, during the May 6 Flash Crash, some HFTs left the market, while the ones that remained increased their selling pressure precisely when prices were falling.”²

On the other hand, there is some concern that HFTs may contribute to abnormal trading volumes during periods of increased market volatility (e.g. most recently, in early August 2011, according to press and market analysts). More evidence would therefore be needed on whether they do generate additional volumes during such episodes, and whether increasing order generation and cancellation frequencies with increasingly sophisticated technology have an impact on the overall resilience of financial market infrastructures, including clearing and settlement systems.

Existing studies also provide mixed evidence on the price discovery role of HFTs. On the one hand, they could be said to contribute to improved price discovery as the high-frequency nature of their trading ensures that new information is incorporated more rapidly into market prices. On the other hand, there is academic evidence that HFTs may lead to greater information asymmetries, thus aggravating adverse selection risk³. HFTs, because of the speed at which they can enter (and exit) the market, may have an information advantage, which cannot be matched by those with slower processing capacities. This in turn may induce the less informed market participants, including those operating under market-making obligations, to leave the market and thus reduce overall liquidity. The withdrawal of certain market participants from lit markets might characterise a long-term structural shift in the liquidity provision process and price discovery efficiency. There is also a growing concern

² Kirilenko, A, Kyle, A S, Samadi, M and Tuzun, T (2011), “The Flash Crash: The impact of high frequency trading on electronic markets,” Commodity Futures Trading Commission working paper. The authors show, however, that HFTs did not behave differently on 6 May than on the preceding days.

³ Easley, D., Lopez de Prado, M. and O’Hara, M. (2011), The Microstructure of the “Flash Crash”: Flow Toxicity, Liquidity Crashes and the Probability of Informed Trading, in The Journal of Portfolio Management, winter, pp. 118-127.

that the expansion of HFT might undermine investor confidence and their willingness to participate in the markets.

Taken together, the ESRB is particularly concerned that the impact of HFT on market liquidity may not be well understood. Market crashes and herding are well known features of the financial system; what is less well known is whether the increased interaction of humans and computerised systems on the one hand, and the increased speed at which the latter operate, has increased the probability of such market crashes occurring. Thus, the activities of AT/HFTs could have a negative impact on the financial stability, although, as discussed above, the literature is inconclusive on the effects of AT/HFTs. These issues thus need to be examined.

b) Amplifying impact on market shocks

The ESRB would also like to draw the attention of the ESMA to the risks that HFT would amplify the transmission of shocks across markets, potentially contributing to one or more financial shocks becoming systemic.

The concerns related to the transmission of shocks are twofold.

- First, if the above mentioned detrimental impact on liquidity materialises (e.g. in a crisis situation the withdrawal of HFT causes illiquidity in one specific market), illiquid conditions could propagate from one market to another e.g. due to fire-sales. Moreover, under certain conditions market liquidity and funding liquidity are mutually reinforcing and can lead to liquidity spirals (Brunnermeier and Pedersen, 2009).
- Second, cross-market arbitrage strategies, while contributing to ensuring efficient pricing mechanisms in an increasingly fragmented trading environment, can also increase the interconnectedness of markets and make for swifter transmission of adverse shocks (contagion) through financial markets. The flash crash of 6 May 2010 has shown that the role of HFT in cross market arbitrage does pose a risk and can impact liquidity conditions in other markets. Investigations by the CFTC and SEC did not point to HFT as a cause of the flash crash, but nonetheless highlighted that the initial trigger event (an unusually large sell-order of a futures contract), through cross-market arbitrage very quickly translated into price declines of and liquidity disruptions on exchange traded funds (ETFs) first and then to individual stocks. The official SEC/CFTC report found that a large share of the cross-market arbitrage which caused the selling pressure on ETFs was related to HFT activity.

Hence, there are some studies showing that the activities of AT/HFTs could amplify the transmission of shocks across markets, with negative consequences for the financial stability. However, also in this field the literature is inconclusive on the effects of AT/HFTs.

It would therefore be warranted to examine further the possible risks to financial stability that might be caused by the activities of AT/HFTs.



3. Possible measures

Some measures which could be considered in order to increase knowledge about possible systemic effects are presented in Box 1 below. They aim at making it easier to identify electronically trading originated by AT/HFT (through a single identifier for HTF and transactions generated), also in order to assess their impact on liquidity.

Box 1: Possible measures to promote monitoring and surveillance

The ESRB welcomes the proposals of ESMA on monitoring of AT/HFT and in seeking to promote a robust and sound functioning of algorithms and associated systems employed by market participants. Such guidelines should in particular contribute to promoting a more “pro-active” monitoring and surveillance by competent authorities of AT/HFT.

The ESRB also welcomes the development of organisational guidelines for trading platforms and investment firms, including with regard to direct market access (DMA) and sponsored access (SA), insofar as the adoption of such requirements would lay the ground for an efficient supervision of AT/HFT.

To facilitate strengthened monitoring and supervision, AT/HFT firms should be authorised and regulated (with specific minimum requirements such as record keeping). In addition, unique identifiers could be developed and required for any HFT and automated transactions to identify trades generated by algorithms. Giving competent authorities access at any time to the characteristics of the algorithms used could also be a valuable measure. However, this should not lead to a “certification regime”. More generally, an appropriate data collection framework would be needed to generate information necessary to allow for improved market surveillance as well as the understanding of the impact of AT/HFT on market structure and implications for the supply of financial services to the real economy. This would include, among other things access by competent authorities not only to transactions but also to orders sent to trading platforms to allow for cross-market surveillance.

If further study and research finds evidence that the activities of AT/HFTs have a detrimental impact on market liquidity, with possible repercussions on the orderly functioning of financial markets and, more broadly, on the real economy, standard setting bodies may have to consider swift and informed measures to address the risks entailed by AT/HFTs. Such measures should address the risks in a “pro-active” manner, going beyond measures entailing monitoring of market developments by financial market regulators, or specifically addressing risks of market manipulation. Competent authorities should also make sure that the scope of regulation is appropriate and encompasses all relevant HFT players and activities. Some possible measures whose merits need to be studied prior to consideration are presented in Box 2. These policy measures could, where relevant, be considered, in view



of the international recommendations⁴ that may be adopted in this area in the next months and the possibility of improving the effectiveness of measures in this field.

Box 2: Possible further measures of a more “pro-active” nature meriting further study

a) Crisis management tools

Establishment, and frequent review of, well-functioning regulator-mandated, coordinated circuit breakers *within* markets (across trading platforms) and, where fragmented, between different trading venues within a single market.

Establishment, and frequent review of, well-functioning regulator-mandated, coordinated circuit breakers *between* markets (across asset classes) to ensure pro-active action ahead of the transmission of shocks across markets. These measures should target in particular listed derivatives, listed funds (ETFs) and structured notes (ETNs), which are particularly likely to induce impacts on underlying assets due to arbitrage. They would however also need to be implemented consistently across markets and market segments.

The proposed technique of circuit breakers between platforms and markets may be difficult to implement in practice. The implementation of such a solution would therefore require further investigation.

b) Structural measures

Introduction of minimum order book resting time to slow spread and speed of HFT and ensure a balanced composition of market liquidity, which must be carefully weighed against possible detrimental consequences.

Introduction of a harmonised definition of market making, together with minimum criteria, in order to ensure the integrity of the term “market making” and uphold robustness in the market.⁵

Introduction of specific fees or taxes based on high order entry, minimum tick sizes and eventually an order book resting time, use of messaging capacity, order cancellations, etc.

The proposals for possible measures which are presented in the two boxes reflect discussions held at the ESRB in a very tight time schedule and is therefore of a preliminary nature.

⁴ See IOSCO Consultation Report “Regulatory Issues Raised by the Impact of Technological Changes on Market Integrity and Efficiency”, July 2011.

⁵ These measures are also mentioned in the consultation on the revised MiFID (question 19 and 20).

The ESRB does not object to ESMA publishing the ESRB response to the ESMA Consultation paper on “Guidelines on systems and controls in a highly automated trading environment for trading platforms, investment firms and competent authorities”