

Christopher Kirkpatrick
Secretary of the Commission
COMMODITY FUTURES TRADING COMMISSION (CFTC)
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Submitted Online:

<http://comments.cftc.gov/PublicComments/CommentForm.aspx?id=1646>

16 March 2016

Dear Mr Kirkpatrick,

TraderServe Response to CFTC Regulation Automated Trading

TraderServe Limited welcomes the opportunity to respond to the CFTC on the proposed regulation Automated Trading (“Regulation AT”). We have restricted comments to our areas of special expertise and particularly those where we have conducted and published original research. Thus we will be responding to questions 42, 43 and 44.

Our principals have been designing algorithms to trade in the US futures markets since 1980 and have previously headed algorithmic trading teams for major banks and hedge funds. Established in 2000 TraderServe has licensed best execution algos to Investment Firms for more than a decade. In 2011 TraderServe created a non-live algo stability testing platform for a major exchange in response to ESMA's draft “Systems and controls in an automated trading environment”. After three years in production using the exchange’s own test matching engine, the draft Regulatory Technical standards for MIFID II (Sep 2015) placed the onus on individual firms to control and self-certify their own non-live algo tests. Accordingly the AlgoGuard platform has been re-engineered to offer testing as a service suitable for use by an investment firm’s own compliance department.

TraderServe Limited strongly supports the thrust of the proposals in Reg AT designed to reduce the risks of Algorithmic Trading Events but we have two major reservations to the actual draft regulations which should be taken together as our responses to your questions 42, 43, 44.

Source Code Transparency

Attending first to the requirements on AT Persons under 1.81 to keep a source code repository including all their trading algorithms which under 1.31 they must make available to regulators, we suggest that the proposals, which many investment firms will find alarming because of the risks to their most valuable intellectual property, are unlikely to be very effective in reducing disorderly market events, and that there is a real danger that the regulation will prove counterproductive. For the sake of clarity we do support developers of algorithms maintaining an audit trailed internal source code repository which could be subject to proportionate subpoena by a court with proper IP protection in cases of alleged serious wrongdoing by the algorithm developers.

Analysis of the May 2010 S&P minis flash crash and the Oct 2014 US Treasuries flash crash shows that these events did not have a simple cause in a single badly behaving algorithm. Rather, it was the combined behaviour of multiple algorithms that caused the problems. We refer to our briefing notes on both episodes^{1 2} and our original research³ on the phenomenon of “Emergent Market Disorder” when algorithms interact in the order book to precipitate and exacerbate disorderly conditions.

Now, no examination of source code will reveal whether the algorithm in question has a disposition to contribute to such conditions in the company of other algorithms from a different source. So such a regime has a strictly limited utility – limited, that is, to effects where only the algorithm itself is at fault. Even then we believe that source code examination is capable of detecting only the most obvious flaws. It is doubtful, for example, that it could ever avert something like the Knight Capital fiasco.

There is a further issue that needs to be considered. The obligation to disclose source code provides the algorithmic trader with a perverse incentive to make the code less rather than more intelligible, and this produces a concomitant increase in risk of its contributing to an Algorithmic Trading Event. In short there is, we feel a very real risk that the proposal would prove counterproductive.

There is also a serious concern that providers of high quality third party algorithms, such as best execution, will discontinue supply in any region where their Intellectual property is threatened. Summary disclosure and subsequent leakage of their source code, which may constitute most of the value in their companies, is a threat to their existence.

Non-Live Testing is much more effective than Back testing

When European regulators looked at this issue they initially favoured the source code disclosure approach. Later, after discussions with the industry and demonstrations of the greater potential of other approaches to prevent market disorder, they decided instead to mandate non-live testing of algorithms for their disposition to cause or contribute to market disorder. Such testing requires the algorithm under test to interact with a realistic market emulation both in normal and stressed conditions. It is very different from the regular backtesting proposed under 1.81 because, in order to be effective, the emulated market must be responsive to the tested algorithm’s orders. Furthermore, in order to investigate the algorithm’s propensity to contribute to “Emergent Market Disorder” it must provide antagonist algorithms as well as stress tests to interact with the tested algorithm. By using measures of disorder provocation for aggressive and passive orders it is possible to target the generic behaviours directly responsible for contributing to market disorder rather than rely upon heuristics to identify individual special cases. Non-live testing of this type is in essence a general stability test of algorithms whereas, as usually applied, back testing is more an attempt at

¹ *Oct 15 2014 Flash Crash in the US Treasuries Markets & its implications for non-live testing*

<http://www.traderserve.com/pdf/TraderServe-BriefingNoteon15oct2014TreasuriesFlashCrash-20160126.pdf>

² *Briefing Note Principally on 6th May 2010 Flash Crash & its implications for non-live testing*

<http://www.traderserve.com/pdf/TS-briefingnote0n6thMay2010FlashCrashandNon-LiveTesting.pdf>

³ *Trading Algorithms, Disorderly Markets and Non-Live Testing A study of emergent behaviours supporting the case for non-live testing regulations*

http://www.traderserve.com/download.php?file=publicdomainresearch/Trading%20Algorithms-Disorderly%20Markets-Non-Live%20Testing-20141202-researchpaper_final.pdf

specific profitability testing. We have shown that, had such testing been mandated for the relevant markets, none of the algorithms identified as partly responsible for either the 2010 S&P minis flash crash or the 2014 US Treasuries flash crash would have been present in live trading. In other words poorly designed and potentially abusive algorithms can be reliably identified in non-live testing using standardised measures of disorder provocation, together with antagonist algorithms and stress tests and stopped before they ever enter live markets.

Conclusion

The likely effectiveness of the Reg AT proposals for preventing future Algorithmic Trading Events is severely limited by two major issues.

- 1) The requirement on AT Persons of complete summary source code disclosure will not mitigate meaningfully Algorithmic Trading Events before they occur. As a consequence of this requirement there is a likelihood of source code obfuscation leading to less intelligible algos and an increase in Algorithmic Trading Events.
- 2) Standard back testing is almost completely unsuited to uncover poorly designed or potentially abusive algorithms which are crucial drivers of market disorder and resultant Algorithmic Trading Events.

We strongly suggest mandating empirical non-live testing of algorithms to avoid causing or contributing to disorderly trading and hence Algorithmic Trading Events. This would harmonise financial regulations in this area with the European Union, thus reducing the additional burden on investment firms, and at the same time would constitute a much more effective way of tackling both poorly designed and potentially abusive algorithms before they can disrupt live markets, thereby obviating the need for full summary disclosure of highly sensitive intellectual property. We note that this approach can be shown to fail all the algorithms identified as partly responsible for the 2010 S&P and 2014 Treasury flash crashes in non-live testing and has excellent utility in preventing Algorithmic Trading Events from occurring in live markets.

Yours sincerely,

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