Non-Live Testing of Algorithms & the EU Market Abuse Regulation (MAR) - protecting your organisation and market integrity

Introduction

MAR (2014/596/EU) was published in the official journal of the EU on 12 June 2014 and comes into full force on 3rd July 2016. This legislation imposes new obligations both on investment firms and operators of trading venues, drawing wide definitions of market abuse, especially regarding market manipulation by algorithms. The range of instruments covered is even wider than under MiFID. It includes "financial instruments" as defined in 2014/65/EU Annex 1 Section C, related spot commodity contracts, as well as almost anything that can impact a benchmark which affects a MIFID instrument.

Penalties

Fines for market manipulation (article 30) can be very large, €15M or 15% of turnover on firms and €5M on individuals. Under CSMAD (2014/57/EU), which comes into force at the same time across most EU countries except the UK and Denmark (which may both specify even harsher criminal penalties), all other countries must legislate for up to 4 years imprisonment for individuals found guilty of algorithmic market manipulation. MAR also specifies "in the event of repeated infringements of Article 14 or 15 [market manipulation], a permanent ban of any person discharging managerial responsibilities within an investment firm or any other natural person who is held responsible for the infringement, from exercising management functions in investment firms " as well as a ban from "dealing on own account".

Reach

MAR is extraterritorial (article 2.3, 2.4) and applies to any person who trades on EU-regulated markets or enters into derivative contracts that reference such instruments, even outside the EU and even if there is no EU leg to their activity. MAR even applies where the person and counterparty enter into OTC derivatives (which reference EU financial instruments) conducted entirely outside the EU.

Obligations

MAR (article 16.2) mandates that "any person professionally arranging or executing transactions shall establish and maintain effective arrangements, systems and procedures to detect and report suspicious orders and transactions. Where such a person has a reasonable suspicion that an order or transaction in any financial instrument, whether placed or executed on or outside a trading venue, could constitute insider dealing, market manipulation or attempted insider dealing or market manipulation, the person shall notify the competent authority as referred to in paragraph 3 without delay". This includes those orders suspected of a very broad range of practices defined as market manipulation, including algorithmic market manipulation (Article 12 and Annex 1). Firms operating trading venues have an additional duty to PREVENT algorithmic market manipulation from occurring on their venues (Article 16.1).

Regulatory Powers

The regulators are granted a fearsome array of investigatory tools to pursue any suspected wrongdoing (Article 23) including: rights to enter premises to seize documents, to obtain documents from other financial and telecoms companies, to freeze and sequester assets, to suspend trading of financial instruments, and to prohibit the exercise of professional activity.

What counts as Market Manipulation?

The following behaviours, amongst others, are defined as market manipulation, and are algorithmic market manipulation when committed by an algorithm:

- "the conduct by a person, or persons acting in collaboration, to secure a dominant position over the supply of or demand … which has, or is likely to have, the effect of fixing, directly or indirectly, purchase or sale prices or ***creates, or is likely to create, other unfair trading conditions*** (12.2a);

- Placing orders including cancels or modifications which (12.1) :
  - "gives, or is likely to give, false or misleading signals as to the supply of, demand for, or price"
  - "secures, or is likely to secure, the price…at an abnormal or artificial level;"
  - "which affects or is likely to affect the price…which employs a fictitious device or any other form of deception or contrivance"
- By (12.2c):
- i) disrupting or delaying the functioning of the trading system of the trading venue or being likely to do so;
- (ii) making it more difficult for other persons to identify genuine orders on the trading system of the trading venue or being likely to do so, ***including by entering orders which result in the overloading or destabilisation of the order book***; or
- (iii) creating or being likely to create a false or misleading signal about the supply of, or demand for, or price of, a financial instrument, ***in particular by entering orders to initiate or exacerbate a trend***;

What counts as an Algorithm?

The definition of "algorithm" is extremely wide (2014/65/EU article 4.39) and can cover most forms of electronic trading. All that is needed is for almost any parameter of even an otherwise manually generated order to be chosen automatically (eg. if an order is broken into two or more pieces by a smart order router or the computer inserts the current best bid or offer into a limit order). Virtually any execution strategy which could be said to meet best execution requirements in liquid markets is likely to be captured under this definition.

Abuse can be unintentional

Under Article 12.1 it is not necessary to profit, or even have a provable intention to profit from abuse, to be guilty of algorithmic market manipulation and vulnerable to heavy penalties. Article 12 uses language: "likely to give", "likely to secure", "likely to affect". MAR prohibits market manipulation, attempted market manipulation which is not completed, as well as behaviour which is likely to result in market manipulation (recital 41), even if these are caused through recklessness or negligence rather than intention or planning.

How non-live testing can help

The prohibition under 12.2 from creating or being likely to create unfair trading conditions is very similar to the situation under MiFID II where (RTS6 and 7) it is necessary to engage in new forms of non-live testing to assess any algorithm's propensity to create or contribute to market disorder (defined only as the absence of a fair and orderly market).

It is easy for an algorithm to be provoked by its interactions with other algorithms into falling foul of these rules. The most effective solution available today is non-live algorithmic stability testing which tests for an algorithm's propensity to create or contribute to market disorder or unfair trading conditions. This is quite different from back-testing for profitability, which cannot model disorder or manipulation arising from the interaction between the algorithm under test and the market, or between multiple algorithms (emergent market disorder). Without disclosing any Intellectual Property, the algorithm connects remotely to realistic responsive emulated order books. Suitable tests are conducted in normal and stressed conditions, in the presence of antagonist algorithms designed to cause difficulties for algorithms under test. By using quantifiable measures of market disorder provocation, well-documented stability tests of algorithms can be carried out before they are ever put into production. This offers a good level of protection against committing algorithmic market manipulation. It is worth noting that suitable algorithmic stability testing, such as that provided by the TraderServe AlgoGuard platform, would have failed all algorithms identified as majorly responsible for the 2010 S&P Minis flash crash and the 2014 Treasuries flash crash in non-live testing.