

Price manipulation

Dara Jovicic

Master thesis in Mathematics

The institutions operating on financial markets have interests in finding a strategy in order to minimize their costs. To this end, certain investors use price manipulation, which allows them to influence the asset prices and, as a result, to obtain large gain. However, price manipulation is definitely unhealthy for the viability of the stock market and, therefore, should be excluded from every adequate market impact model. In order to identify combinations, which admit price manipulation, all models have to be carefully analyzed: in the linear case, the situation is completely understood, but, on the contrary, non-linear problems need further studies, as they are more complicated and less examined. In this work, price manipulation was found in a configuration with a power-law impact function and an exponential memory kernel by means of the construction of a saw-teeth strategy. Especially, if it is possible to trade successively at very close time points, the expected gain tends to infinity. These results could be a first step towards a general theorem, including all non-linear cases with price manipulation. Then, an algorithm could be developed to detect traders using certain strategies only to speculate on the prices and take advantage of large benefits.

Prof. Dr. Christian Mazza