

The maximum of financial greed for the algorithm of two agents cooperation

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Knowing the computational complexity of an algorithm makes it possible to calculate its speed accurately. This also applies to algorithms operating on financial markets. However, this measure will not tell us anything about the value of financial operations performed by such algorithms. It is not only the time that counts, the profits achieved by the algorithm in that time are equally important.

The measure expressing the financial attractiveness of an algorithm operating in the market (hereinafter referred to as the financial greed of the algorithm) depends both on how the algorithm operates and on the supply and demand situation in the market. We propose a definition of the measure of financial greed of a market algorithm that somewhat resembles Newton's second law of motion. It is interesting to study the conditions at which financial algorithms reach the maximum values of their greed. In the case of a single trader, the maximum of the greed function of its action turns out to be at a fixed point of this function, see [1-3].

We will present an extension of this model to a two agents cooperation. It turns out that such an algorithm reaches a maximum of its greediness below the fixed point of this function. Each participant in the cooperative individually always achieves a profit lower than the highest profit of a single trader operating on the same financial instruments. However, as a result of the correlation of the relevant transactions, the cooperative leads to profits that exceed the performance of a single trader operating in the same market. It is oriented towards lower individual profits and single trades more frequently (it has a lower trading margin). This is an interesting aspect of the benefits of synchronized cooperation. Algorithms that exhibit maximum greed are not only attractive to entities (including complex ones) operating in financial markets. For example, such algorithms can most effectively distill knowledge base corpora, increasing the quality of the information they contain [4]. The greed measure presented here therefore appears to be a universal measure, relevant to different types of environments that are characterized by well-defined utility for the entities operating in them.

References

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