

Multi-market trading problem

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The trading task is challenging problem for most mathematics and economists [3]. The problem is based on price speculation, where the speculator tries to buy cheap commodity contract, wait for price increase and then earn money by reselling the contract. Nowadays, the approaches provided by exchanges allows to speculate on increase and also decrease of the commodity price. Thus, the speculation on market changes in stochastic game, when speculator bets whether the price increase or decrease.

To design the trading strategy, speculators use various methods. The main streams are the fundamental analysis and the technical one. The fundamental analysis assumes that actual price does not reflect the real price, therefore bases predictions on analysis of the market state, actual news and activities of institutions. In contrast, the technical analysis deals primary by price curves to predict the further price behavior.

Classical investing methods based on fundamental analysis (e.g. value investing [2] or indexing [1]) serve primary for stock trading and the for long-time investment in terms of decades. The methods of technical analysis [6], unlike the fundamental one, provides profit in short-time, as it recommends actions more often, i.e. one action per week or month. However, there is no method of technical analysis, which results in profitable strategy working for decades. The viability of these approaches is about a year. Then, it should be completely revised. Beside, the successful methods, if any, are not advertised everywhere and are kept in strict confidence. So up to the author's best knowledge, there is no known methodology how to design optimal strategy for speculators.

Our previous research can be classified as technical analysis, because we work with the price sequences and design the speculator strategy [4, 7]. Moreover, we extend the price sequence by additional channels [5]. But our previous approaches worked with infinite capital to invest and with a single market, because with infinity capital, the multiple market trading can be solved separate market by market.

The paper deals with extension the task for constrained capital and multiple markets, but the task grows exponentially with the number of markets. Therefore the another representation of the task must be searched. We present the representation by participants, where each participant works with one market and communicates with other participants by asking and bidding the capital. The basic experiments and comparing with the original task are presented.

References

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