SRG Market microstructure

Optimal execution problem in Obizhaeva–Wang framework

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Our methodology to fit parameters ρ, κ, q

We chose regression to find parameters:

$$\frac{\Delta A_{k+2}}{\Delta t_{k+2}} - \frac{\Delta A_{k+1}}{\Delta t_{k+1}} = -\rho \Delta A_{k+1} + \rho \lambda x_{k+1} + (\kappa + \lambda)(\frac{x_{k+2}}{\Delta t_{k+2}} - \frac{x_{k+1}}{\Delta t_{k+1}}).$$

Where all the information needed can be extracted from the l3 data:

- ΔA_k is an ask change after execution of the limit order with the depth x_k.
- Δt_k is a time between k and $k+1$ orders of dataset.

Research plan

- Develop methodology for fitting OWM parameters and use it to get optimal execution strategy.
- Compare different approaches of measuring resiliency on l3 data.
- Compare discrete and limit OW execution strategies.
- Propose a backtest procedure for the optimal execution algorithm, implement it, and compare the algorithm with TWAP on real market data.