

Trade Allocation Strategy to Minimize Slippage

Introduction:

In financial markets, it is costly to execute a large trade at once via a market order since it will result in severe slippage. This is due to the fact that big market orders drain liquidity at the top of the book and start filling at unfavorable prices. To prevent this, we want to divide a large order over time in order to reduce overall slippage cost.

This article summarizes how we leveraged the modeled temporary impact function $g_t(x)$, which quantifies slippage for order size x at time t , to develop an optimal trade allocation strategy.

Method:

We employ a greedy allocation algorithm to reduce overall slippage for an order of $S = 10\{, \}000$ shares.

Steps:

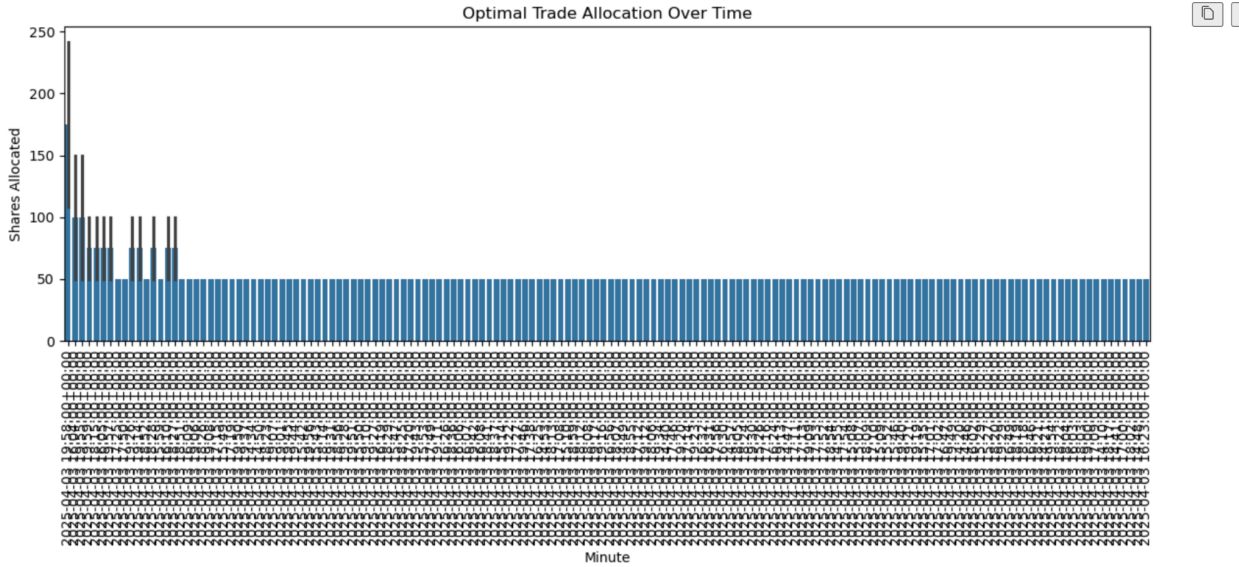
We begin with the precomputed values of $g_t(x)$ from the order book on a per-minute basis.

- For every minute and order size, we compute total cost:
- $\text{cost} = x \cdot g_t(x)$
- We sort all combinations by cost.
- We keep adding the lowest-priced blocks until we get 10,000 shares.

This manner distributes the order across the cheapest minutes, utilizing real-time liquidity and price depth.

Results:

The ensuing allocation places trades in bursts where slippage is lowest — that is, deep liquidity was present or spreads were tight. Most trades are executed early in the day where the market was most favorable, with some steady blocks in stable times.



Conclusion:

This approach guarantees that the execution is cost-effective without making any assumptions about forecasting or the future. The strategy responds directly to prevailing order book circumstances and fills the order optimally over the course of the trading day.

By trading the low-slippage times first, we circumvent the expense of trading in large sizes all at once and successfully trade off execution speed for cost efficiency.