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MASTER'S THESIS PRESENTATION

An Optimal Control Approach to Trading in Chinese Markets

WHEN
May 6, 2022
12:30 PM

WHERE
Zoom Meeting
For ZOOM presentations, details will be provided in an email announcement for this seminar.

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Recent years have brought on a meteoric rise in systematic investment in the equity markets of China. However, the researcher faces the challenge of both finding a predictive returns model and conforming to the idiosyncratic "T+1 Rule", which states that shares bought on day T must be held until day T+1. We address these challenges and develop a quantitative single-stock trading strategy on the Shanghai Stock Exchange (SSE).

In order to form an alpha model, we explore the predictive power of order flow imbalance (Cont, 2014), a novel transformation of the limit order book, on price formation. Using order flow imbalance as input, we apply classical and modern machine learning techniques to obtain a model that demonstrates a high level of predictive power over high-frequency returns.

With an alpha model in hand, we address the challenge of turning a predictive returns model into a trading strategy under the constraints of the T+1 Rule. We approach the problem from an optimal control perspective and view the trader as an agent in a POMDP. Dynamic programming is then applied to extract an optimal policy. Finally, we backtest on real data from the SSE.

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