Information and Learning in Limit Order Markets

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Abstract

This talk provides a unified framework of market microstructure and agent-based models of limit order markets to examine how traders process and learn from market information and how asymmetric information and learning affect order profit, trading behavior, information efficiency, order flow and market liquidity in limit order markets. The learning is introduced through a genetic algorithm with a classifier system about order book information and market conditions. We focus on the behavior heterogeneity between informed and uninformed traders when they share the same learning algorithm. It is found that learning increases liquidity supply and reduces the bid-ask spread in general. However, different from informed traders, the learning of uninformed traders improves market information efficiency and makes them submit less aggressive limit orders and more market orders. We also examine the effect of high frequency trading (HFT) and find that the learning plays more important role than the trading speed in generating HFT profit. Overall HFT reduces market orders and increases aggressive limit orders, improves market information efficiency, increases volatility, trading volume and the bid-ask spread, but reduces order book depth, and generates significant event clustering effect in order flows. The findings provide some insight and intuition into the trading processing in limit order markets and the current debates on the HFT.