Strategic Foundation for the Tail Expectation in Limit Order Book Markets

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Abstract

In an environment with noise traders and informed traders trading on news, we model competition in schedules by liquidity suppliers quoting on a limit order book. We show that there is an equilibrium featuring quoters using mixed strategies; each quoter employs a step function, offering the same quantity of shares at random prices (and, of course, random bid prices). These random prices with their associated quantities form the market quotes and the depth of book, or price schedule. There are equilibria with a smaller number of quoters quoting a larger number of shares and equilibria with a larger number of quoters quoting a smaller number of shares. Considering a sequence of equilibria with the number of quoters becoming large, we establish that the stochastic equilibrium price schedule converges to the zero-profit deterministic competitive price schedule.

Keywords: competition in schedules, financial markets, limit orders, tail condition, flickering quotes