High Frequency Market Making: Optimal Quoting

Yacine Ait-Sahalia, Princeton University - Department of Economics; National Bureau of Economic Research (NBER) & Mehmet Saglam, University of Cincinnati - Department of Finance - Real Estate

Abstract: We propose a model of market making where a strategic high frequency trader exploits his speed and informational advantages to place quotes that interact with the orders of low frequency traders. We characterize the optimal market making policy of the high frequency trader analytically. Our model shows that higher speed translates into higher profits through a more aggressive quoting policy. The optimal policy is consistent with empirically documented features of high frequency trading such as order cancellations and predatory trading.

PLUS

High Frequency Market Making: Implications for Liquidity

Abstract: We analyze the consequences for liquidity provision of competing market makers operating at high frequency. Competition increases overall liquidity and deters the fast market maker’s use of order flow signals. Using various liquidity metrics, we find that the market maker provides more liquidity as he gets faster but shies away from it as volatility increases. We then provide a model-based analysis of the impact of four widely discussed policies designed to regulate high frequency trading: imposing a transactions tax, setting minimum-time limits before quotes can be cancelled, taxing the cancellations of limit orders, and replacing time priority with a pro rata or random allocation. We find that these policies are largely unable to induce high frequency market makers to provide liquidity that is robust across volatility events.