Comments on a bid-ask model for liquid markets

Douglas M Vieira (IMPA)
Advisors: Jorge P Zubelli and Luca P Mertens

Abstract

The talk presents and discuss – both theoretically and empirically – the Markovian micro structure model presented in Cont and de Larrard (2013). Among many other theoretical results, the model provides distributions for the durations between mid price changes, probabilities of mid price changes conditioned to the state of the order book and a formula describing price intraday volatility in terms of pure microstructure statistics. The empirical analysis was built upon a high frequency dataset of NBBO (national best bid and offer) quotes for the NYSE market. The model assumptions are verified and its theoretical results are compared with empirical data for the stocks from the Dow Jones Industrial Average Index, one of the most liquid markets in the world. Based on the empirical analysis, we conclude that the model gives a good description of the market dynamics at the high frequency level, and produces consistent results with the data, including the aforementioned volatility relationship.

Keywords: *limit order book, market microstructure, birth-death process, renewal theory, diffusion limit, high frequency data*