A simple microstructure model based on the Cox-BESQ process with application to optimal execution policy

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Abstract

We develop a microstructure model whose order flow is driven by a Cox-BESQ process. We derive important analytical properties of the Cox-BESQ process in order to explicit the stock price dynamics at different time scales, provide different parameter estimators and solve the optimal execution problem. We implement the model using a large data set of stock index and bond futures. Our results show that the Cox-BESQ process provides an alternative framework to the Hawkes process to build a microstructure model that is very flexible.

JEL Classification: C13, C32, C58
Keywords: Microstructure model, Stochastic intensity model, Cox-BESQ process, Optimal execution.

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