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Abstract

In this paper we propose an overview of the recent academic literature devoted to the applications of Hawkes processes in finance. Hawkes processes constitute a particular class of multivariate point processes that has become very popular in empirical high-frequency finance this last decade. After a reminder of the main definitions and properties that characterize Hawkes processes, we review their main empirical applications to address many different problems in high-frequency finance. Because of their great flexibility and versatility, we show that they have been successfully involved in issues as diverse as estimating the volatility at the level of transaction data, estimating the market stability, accounting for systemic risk contagion, devising optimal execution strategies or capturing the dynamics of the full order book.

Keywords: Hawkes process • price formation • multivariate point process • price impact • market stability • risk contagion