Integer-valued trawl processes: A class of stationary infinitely divisible processes

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October 7, 2012

Abstract

This paper introduces a new continuous-time framework for modelling serially correlated count and inter-valued data. The key component in our new model is the class of so-called integer-valued trawl (IVT) processes, which are serially correlated, stationary, infinitely divisible and integer-valued processes. We analyse the probabilistic properties of such processes in detail and, in addition, study volatility modulation and multivariate extensions within the new modelling framework. Moreover, we illustrate in a simulation study how our new models can be estimated. We give an outlook on how such processes can be used in modelling high frequency financial data.

Keywords: Lévy bases; Trawl processes; Stationarity; Stochastic volatility; Meta-time change