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

OLE E. BARNDORFF-NIELSEN
The T.N. Thiele Centre for Mathematics in Natural Science,
Department of Mathematical Sciences, Aarhus University,
Ny Munkegade, DK-8000 Aarhus C, Denmark
& CREATES, Aarhus University
`oebn@imf.au.dk`

ASGER LUNDE
CREATES, School of Economics and Management, Aarhus University,
Bartholins Allé 10, DK-8000 Aarhus C, Denmark
`alunde@econ.au.dk`

NEIL SHEPHARD
Oxford-Man Institute, University of Oxford,
Eagle House, Walton Well Road, Oxford OX2 6ED, UK
& Department of Economics, University of Oxford
`neil.shephard@economics.ox.ac.uk`

ALMUT E. D. VERAART
Department of Mathematics, Imperial College London, & CREATES
180 Queen's Gate, SW7 2AZ London, UK
`a.veraart@imperial.ac.uk`

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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