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Automated model selection in finance: General-to-Specific modelling of the mean, variance and density

General-to-Specific (GETS) modelling has witnessed major advances over the last decade thanks to the automation of multi-path GETS specification search. However, several scholars have argued that the estimation complexity associated with financial models constitutes an obstacle to multi-path GETS modelling in finance. Making use of a recent result on log-GARCH Models, we provide methods and develop a simple but general and flexible algorithm that automates financial multi-path GETS modelling. Starting from a general model where the mean specification can contain autoregressive (AR) terms and explanatory variables, and where the exponential variance specification can include log-ARCH and log-GARCH terms, an asymmetry term, Bernoulli jumps and other explanatory variables, the algorithm we propose returns parsimonious mean and variance specifications, and a fat-tailed distribution of the standardised error if normality is rejected. The finite sample properties of the methods and of the algorithm are studied by means of extensive Monte Carlo simulations, and three empirical applications suggest the methods and algorithm are very useful in practice.

(This is joint work with A. Escribano.)