What hides behind an extreme currency demand? Bayesian semi-parametric modelling of heteroscedastic extremes

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Extreme value theory is concerned with the risk of occurrence of rare but catastrophic events—such as a financial market crash, bank panic, or the bankruptcy of a key player in an economic network. In this talk, I will introduce novel Bayesian semiparametric inference methods for heteroscedastic extremes. The proposed model is based on an extreme value index regression and on a conditional scedasis function, and can be used for assessing how the magnitude and frequency of the extreme values can change along with a covariate. I start with the unconditional setting and show that the proposed inference methods for the scedasis density—based on a Bernstein–Dirichlet prior—perform well in Monte Carlo simulation studies, are exact apart from Monte Carlo error, and have full support on the space of all continuous scedasis functions. I then extend the proposed methods to the conditional setting using dependent stick-breaking process.

I resort to the proposed methodologies to examine the question: "*What hides behind an extreme currency demand*?" Data from Portugal is used to conduct the proposed inquiry. The signatures of the fitted scedasis densities of extreme currency demand—over different denominations—reveal some interesting insights on the dynamics governing currency demand during periods of economic stress.

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