ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

INVITATION TO THE DOCTORAL SEMINAR

Shrinking Stochastic Volatility Models

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Chaired by Gregor Kastner | Department of Statistics

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N.2.35

ABSTRACT

Stochastic volatility (SV) models are prominently used to model time-varying volatilities. These state-space models utilize the flexibility of an autoregressive process of order one in the state equation to accurately adapt to (potentially) time-varying volatilites. However, in the simple case of a constant variance, the model is overparameterized and estimation of a smooth path poses a challenge that only strong prior choices can muster. We propose a novel conditional prior for the variance parameter of the volatility process to alleviate this shortcoming. By shrinking the stationary variance of the state equation rather than its innovation variance, we ensure that stronger persistency of the process leads to stronger shrinkage of its innovations. This linkage of the variance and persistence parameter enables the estimation of smooth processes even for fairly general prior settings. We show that the addition of a hierarchical prior further improves the accuracy of the new model in a simulation study and on an empirical case study.

We hope to see you there!

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