A BAYESIAN BENCHMARKING METHOD WITH APPLICATIONS TO THE QUARTERLY NATIONAL ACCOUNTS

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Abstract

The paper proposes a new Hierarchical Bayes method to derive high-frequency series consistent with less-frequency data, using indicators. The method allows for the prior setting of covariates between the high-frequency values and it rewards with a greater prior probability the smoothness of the resultant series. A linear model relating the high-frequency series with the package of the relevant indicators provides the likelihood function. We can suggest a prior covariance matrix for the errors to take into account any known information or alternatively, we can accept that they are independent a priori. In any case, the method provides the posterior covariance matrix. Both the prior distributions and the likelihood function belong to the normal-gamma family. The last section of the paper shows a first evaluation of the procedure, using a series arising from the Spanish Quarterly National Accounts. In order to compare it with the classic methods, several schemes for errors are simulated, producing different versions for the indicators. The resultant quarterly estimated series are then compared with classic estimates of them.