

# A Generalized Bayesian Information Criterion

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Schwarz Bayesian information criterion (SBIC) is a widely used decision rule for selecting a model out of nested alternatives. A desirable property of SBIC is that it leads to the choice of the correct model with unit probability asymptotically. It is known, however, that in some cases SBIC as originally derived by Schwarz (1978) is not a correct Bayesian information criterion, not correctly incorporating some important elements of the model under study. An example is the case with a model containing some nonstationary components. In this paper we discuss generalization of Bayesian information criterion to such cases based on the idea of Schwarz (1978). We also study properties and performance of the generalized Bayesian information criterion. A series of Monte Carlo study is performed for several examples of model selection. The results show that our generalized Bayesian criterion has superior power for selecting the true models in finite samples over SBIC and classical hypothesis testing procedures.

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