

## FIRST ORDER AUTO-REGRESSIVE TIME SERIES MODELS AND THE BOOTSTRAP

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Measures of statistical accuracy for parameter estimates can be obtained through a procedure known as the bootstrap. In applying the bootstrap to time series models, it is possible to estimate a sampling distribution even when the parent distribution is unknown. The idea is to create pseudo data sets, each providing another realization of the parameter estimator. One bootstrap method, the residual errors bootstrap, attempts to replicate an observed time series sequence given a specific model and a finite data set. Another bootstrap method, known as the moving blocks bootstrap, attempts to maintain the dependency of time series observations, without the assumption of a specific model. The reliability of a conventional time series model based on normal errors may be compromised if the true errors come from a  $t$  or  $\chi^2$  distribution. By comparing bootstrap standard errors to true standard errors - obtained in simulation - the applicability of the bootstrap to first order auto-regressive time series was investigated. Our preliminary results, for a small number of simulations, are that the success of the bootstrap method depends on the error distribution of the original time series.