1   Information Criterions

We define two types of information criterion: the Akaike Information Criterion (AIC) and the Schwarz?s Bayesian Information Criterion (BIC). The Akaike information criterion is a measure of the relative goodness of fit of a statistical model.

$$AIC = 2p - 2ln(L)$$

- p is the number of predictor variables in the model.

- L is the value of the Likelihood function for the model in question.

- For AIC to be optimal, n must be large compared to p.

An alternative to the AIC is the Schwarz BIC, which additionally takes into account the sample size n.

$$BIC = plnn - 2ln(L)$$

When using the AIC (or BIC) for selecting the optimal model, we choose the model for which the AIC (or BIC) value is lowest.

Akaike Information Criterion

- Akaike?s information criterionis a measure of the goodness of fit of an estimated statistical model. The AIC was developed by Hirotsugu Akaike under the name of ?an information criterion? in 1971.

- The AIC is a model selection tool i.e. a method of comparing two or more candidate regression models. The AIC methodology attempts to find the model that best explains the data with a minimum of parameters. (i.e. in keeping with the law of parsimony)

- The AIC is calculated using the ?likelihood function? and the number of parameters . The likelihood value is generally given in code output, as a complement to the AIC. (Likelihood function is not on our course)

- Given a data set, several competing models may be ranked according to their AIC, with the one having the lowest AIC being the best. (Although, a difference in AIC values of less than two is considered negligible).