

Akaike Information Criterion

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Hello,

I've been doing some self-study of forecasting and have a question about calculating the AIC. I have a time series of data and wish to determine the linear model of order p which is most appropriate for the data. Suppose the time series is $\{r_t\}$ with $t=1,2,\dots,T$. I am fitting a linear model of the form:

$$r_t = x_0 + x_1 r_{(t-1)} + \dots + x_p r_{(t-p)} + e_t$$

I have seen several different definitions of the AIC, most commonly

$$AIC(k) = \text{Log}(\hat{\sigma}_k^2) + 2k/T$$

I think my question is on calculating $\hat{\sigma}_k^2$. Do I have to use least squares to estimate the parameters x_0, x_1, \dots, x_p , then calculate e_t for $t=k+1, k+2, \dots, T$, and then find the sum of squares of the e_t , and then divide by $T-p$? Or is there an easier way to do this?

Thanks,
Bob Buchanan

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