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The Performance of AICC as an Order Selection Criterion in ARMA Time Series Models

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ABSTRAK

Kajian ini bertujuan untuk menilai prestasi kriteria maklumat Akaike diperbaiki atau AICC (Akaike's Information Corrected Criterion) sebagai kriteria penentuan peringkat dalam pembentukan model Autoregresif Purata Bergerak (Autoregressive Moving-average) atau ARMA(p, q). Suatu penyelidikan simulasi dijalankan untuk menentukan kebarangkalian di mana kriteria AICC minima telah memilih model *sebenar* dengan tepat. Keputusan yang diperolehi menunjukkan bahawa prestasi kriteria AICC adalah sekadar sederhana. Masalah lebihan pemboleh ubah (over pameterization) wujud, tetapi masalah kurangan pemboleh ubah (under parameterization) berada pada tahap yang minima. Oleh itu, bagi sebarang dua model yang setanding, adalah lebih wajar untuk kita memilih model dengan peringkat p dan q yang lebih rendah.

ABSTRACT

This study is undertaken with the objective of investigating the performance of Akaike's Information Corrected Criterion (AICC) as an order determination criterion for the selection of Autoregressive Moving-average or ARMA (p, q) time series models. A simulation investigation was carried out to determine the probability of the AICC statistic picking up the *true* model. Results obtained showed that the probability of the AICC criterion picking up the correct model was moderately good. The problem of over parameterization existed but under parameterization was found to be minimal. Hence, for any two comparable models, it is always safe to choose the one with lower order of p and q.

Keywords: AICC, ARMA, under/over parameterization

INTRODUCTION

In the process of time series autoregressive moving-average or ARMA (p, q) modelling, we do not know the *true* order of the model generating the data. In fact it will usually be the case that there is no *true* ARMA (p, q) model, in which case our goal is simply to find one that represents the data optimally in some sense (Brockwell and Davis, 1996). However, the challenge is to decide the optimal orders of p and q (Beveridge and Oickle,

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