

**Comparison of Predictive Ability of Two Competing ARMA Models Via
Cross-Spectral Analysis**

by

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A thesis submitted
in partial fulfillment of the requirements
for the degree of

Master of Science (Statistics)

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May, 2011

ABSTRACT

A test for white noise in spectral analysis is proposed to compare two competing models in terms of predictive ability. If the null hypothesis of similar predictive ability is rejected, we propose to use median test to detect significant difference in cross-amplitude values of two competing non-equivalent models, this leads to the model that has better predictive ability.

The simulation study shows that the procedure was able to detect both equivalence and non-equivalence of simulated models, except when there is over fitting in either of the competing forecasts. Non-equivalence was detected even in nearly non-stationary and non-invertible scenarios. The procedure is least sensitive for very small samples, say 30, but increasingly becomes more sensitive when sample is increased to at least 60 and achieves 98 – 100% correct classification when sample size is large at 1,000. The median test was able to significantly detect models with higher predictive ability even in the presence of non-stationarity and non-invertibility conditions, though not as better as their stationary and invertible counterparts.