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TIME SERIES MODELS FOR FORECASTING: TESTING OR COMBINING?

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ABSTRACT

In this paper we compare the forecasting performance of hypothesis testing procedures with a model-combining algorithm AFTER. Testing procedures are commonly used in practice to select a model based on which forecasts are made. However, besides the well-known difficulty of multiple testing, the testing approach has a potentially serious drawback: controlling the probability of Type I error can excessively favor the null, which can be problematic for the purpose of forecasting. In addition, testing procedures can be very unstable, which results in high variability in the forecasts.
We advocate the use of AFTER for the purpose of forecasting when multiple candidate models are considered and there is a non-negligible uncertainty in finding the best model. Through several simulation studies and data examples, we found that AFTER algorithm behaves better than testing procedures in the situations we considered.