

## **The combination of forecasts with different time aggregation**

### **ABSTRACT**

In forecasting, it is important to improve forecast accuracy. Thus, the forecast combination have been proposed in the literature. Usually, the classical approach in forecast combination obtain from the composite of two (or more) available forecasts with identical timings. However, forecast horizon, short and long term do affect the forecast performance. Therefore, unlike previous combinations, this paper combined the forecasts with different time aggregations in order to capture the unique information of the data set. We had considered the problems in forecasting daily air pollutant index (API) as well as the monthly aggregate, by using the Box-Jenkins method and fuzzy time series method as the time series approach. Then, the monthly aggregate forecasts were interpolated to obtain the forecasts on a daily basis. Each of the original forecasts was used to determine the weights in forming the combined forecast. The error magnitude measurements were used to measure the accuracy. The result showed that the forecast combinations with different timings outperformed the individual forecasts and traditional forecast combinations with identical timing. Hence, the combination of different timing data sets produced better forecasting accuracy, which can be a good practice in many types of data with different time horizon.

**Keyword:** Forecast combination; Forecasting; Aggregate data; Box-jenkins; Fuzzy