

## C223112 : MAJOR STATISTICS

KEY WORD : EXPONENTIAL SMOOTHING TECHNIQUE/FORECASTING/MISSING DATA

JEERAPA SAPPAKITKAMJORN : A COMPARISON ON EXPONENTIAL SMOOTHING

FORECASTING TECHNIQUES IN CASE OF MISSING DATA. THESIS ADVISOR :

ASST. PROF. CAPT. MANOP VARAPHAKDI, M.S. 184 PP. ISBN 974-581-429-6

The objective of this study is to compare the forecasting methods in time series analysis having missing observations or gap. The forecasting methods under consideration in this study are single and double exponential smoothing techniques modified by 1) Aldrin and Damsleth 2) Wright and 3) The single and double exponential smoothing techniques with estimating missing observations. The comparison was done under conditions of sample sizes, proportion of missing observations and proportion of observations after the gap. Besides comparing the forecasting methods, this study also considers the impact of number of missing observations and number of observations after the gap on the forecast error. The data for this experiment were generated through the Monte Carlo simulation technique. The experiment was repeated 1,000 times under each condition to calculate the forecast values and the square root of mean square error of the three forecasting methods.

Results of the study are as follow :-

- 1) The forecasting method with modification by the procedure of Aldrin and Damsleth has forecast error lower than other methods when there are a few of observations after the gap. When there are a large number of observations after the gap there is little difference between the forecasting methods with modification by Aldrin and Damsleth procedure and the forecasting methods with estimating missing observations. For most conditions the forecasting method with modification by Wright's procedure has forecast error higher than other methods.
- 2) The impact of a gap on the forecast error diminishes as the number of observations after the gap increases for some conditions.