

The Research Centre of the Faculty of Economics
cordially invites you to a research seminar
on **Monday, 8th May 2017**
at **1 p.m.** in room **P-201**
at the **Faculty of Economics, University of Ljubljana**

Kardeljeva ploščad 17
SI - 1000 Ljubljana, Slovenia
Tel.: +386 1 5892 400
Fax: +386 1 5892 698
info@ef.uni-lj.si
www.ef.uni-lj.si

Author: **prof dr. Liljana Ferbar Tratar, Faculty of Economics, University of Ljubljana**

will present the article:

**“FORECASTING METHODS and JOINT OPTIMIZATION OF THE
FORECASTING/INVENTORY PROBLEM”**

“Exponential smoothing methods are powerful tools for denoising time series, predicting future demand and decreasing inventory costs. We develop a smoothing and forecasting methods that are intuitive, easy to implement, computationally stable, and can satisfactorily handle both, additive and multiplicative seasonality, even when time series contain several zero entries and large noise component.

We start with the classical additive Holt-Winters method and first drop one occurrence of parameter alpha in equation for level and second introduce an additional smoothing parameter in the level equation. All parameters are required to lie within $[0,1]$ and estimated by minimizing the one-step-ahead forecasting errors in the sample. Doing so, the errors decrease substantially, especially for the time series with strong trend. The newly developed methods produce more accurate short-term out-of-sample forecasts than the classical Holt-Winters methods and the Holt-Winters methods with damped trend.

The performance of the methods is evaluated using a real time series from the M3-Competition. A simulation study is conducted for further in-depth analysis of the method under different demand patterns. We developed and justified the use of a symmetric relative efficiency measure that allows researchers and practitioners to evaluate the performance of different smoothing and forecasting methods.

Forecasting plays a central role in the efficient operation of a supply chain – i.e., the total costs and fill rate. As forecasts of demand are required on a regular basis for a very large number of products, the methods developed should be fast, flexible, user-friendly, and able to produce results that are reliable and easy to interpret by a manager.

We show that the supply chain costs cannot be optimal if the forecasting method is treated separately from the inventory model. We analyse the performance of the joint optimization of the modified and extended Holt-Winters forecasting methods and a stock control policy and investigate the effect of different penalties for unsatisfied demand on the total cost of the supply chain.

From the results we show that an essential reduction of supply chain costs and an increase of fill rate can be achieved if we use the joint model with the modified and extended Holt-Winters method.”

You can register for the free seminar by phone (01) 58-92-490, or via e-mail:

research.seminars@ef.uni-lj.si by Sunday, 7th May 2017.

You can find all information regarding future research seminars on following link:

http://www.ef.uni-lj.si/raziskovanje/seminarji_in_konference

We look forward to seeing you!

