國立中山大學應用數學系
學術演講

講　者：張志浩 教授 (政治大學)

講　題： An Algorithm of Sample-Splitting with Applications to Electricity Consumption and Airline Traffic Data

時　間：2024/10/31 (Thursday) 14:10~15:00

地　點：理 SC 4009-1 教室

茶　會：13:45

Abstract

Sample-split methods have been extensively studied and widely utilized in threshold regression models for nonlinear time series analysis. For example, in analyzing air traffic data within individual countries, it is common to model the data separately for peak and off-peak seasons based on industry experience in aviation. Similarly, for electricity consumption trends, distinct models are often developed for workdays and weekends to enhance predictive performance. These practical approaches motivate us to develop a data-driven sample-split criterion to further improve model forecasting capabilities. In this talk, we present an innovative iterative two-stage sample-split algorithm designed for estimating threshold boundary regression (TBR) models. We meticulously evaluate the consistency and performance of the two-stage estimators of threshold and regression parameters under well-defined regularity conditions. To improve the precision and efficiency of TBR model estimation, we integrate the weighted support vector machine (WSVM) as a surrogate method for the optimization problem. We then apply the proposed algorithm to datasets on the monthly U.S. international and domestic airline passengers and daily electricity consumption in Belgium. By splitting the data into two subsets and fitting time series models separately for each subset, we enhance the predictive power in the analysis of nonlinear data. Additionally, through extensive simulation studies, we demonstrate the finite-sample performance of the TBR-WSVM approach.

Keywords：consistency, least-squares method, support vector machine, threshold time series model

敬 請 公 告！ 歡 迎 參 加！

應用數學系：http://math.nsysu.edu.tw
校園地圖：http://math.nsysu.edu.tw/var/file/183/1183/img/779/nsysu_math_map.jpg
交通資訊：https://www.nsysu.edu.tw/p/412-1000-4132.php?Lang=zh-tw

應用數學系

校園地圖

交通資訊