

國立中央大學

統計研究所

學術演講

主 講 人：林良靖 教授（國立成功大學統計學系）

講 題：Symbolic Interval-Valued Data Analysis for Time Series based on Normality Assumption

時 間：107年10月16日（星期二） 上午11：00 ~ 12：00

地 點：中央大學鴻經館M429室

茶 會：上午 10：30 ~ 11：00 地 點：鴻經館 510 室

ABSTRACT

This study considers interval-valued iid and time series data. For the former, an approximate expectation formula of order statistics from normal distributions is used in the univariate case to estimate the mean and variance via the method of moment. In contrast, in the bivariate case, we use the maximum likelihood estimator, calculated from a likelihood function derived under the normal assumption. For the latter, to characterize interval time series data, we propose an auto-interval-regressive (AIR) model using the order statistics from normal distributions. Furthermore, to better capture heteroscedasticity in volatility, we designate an autoregressive conditional heteroscedasticity (AIR-ARCH) model. The likelihood functions of AIR and AIR-ARCH models are also derived to obtain the maximum likelihood estimator. Monte Carlo simulations are conducted to evaluate our methods of estimation, confirming their validity and superiority to other methods. Real data examples are also carried out for air quality indices and the S&P 500 Index for illustration.

Keywords : Symbolic data analysis, interval-valued data, order statistics, time series, auto-interval-regressive model, AIR-ARCH model.

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