Recent Advances in Econometric Forecasting
Summer School on Econometrics and Statistics
Xiamen, July 2015

Instructor: Professor Tae Hwy Lee, University of California Riverside, Email: taelee@ucr.edu

Lectures: 4 lectures (each 3 hours) on July 9-10, 2015

Course Outline: We review the recent development in time series forecasting research in econometrics with applications in finance and macroeconomics. We begin with a review of basic forecasting theory, loss functions and econometric models, properties of optimal forecasts, concept of forecast rationality under flexible loss functions, forecast combination and forecast encompassing. We then review the methods of comparing predictive ability of non-nested and nested models. We discuss issues in Diebold-Mariano statistic in comparing two or more forecast models, issues in inference in predictive regression (to test for Granger-causality in the conditional mean, conditional quantiles, conditional expectiles and in conditional expected shortfalls) when the predictors are weakly stationary and also when they are persistent possibly with drift, possibly with endogeneity due to correlation between the predictor and error, forecasting with many predictors, using factor models based on the principal components, Nelson-Siegle factor models, partial least squares, and Stein-type shrinkage. Also considered are forecasting with constraints and decompositions, using bootstrap bias correction, using nonlinear time series models, GMM estimation of the forecaster’s loss function using observed forecasts, and etc. Each topic will be demonstrated with examples and applications in financial econometrics.

1. Loss functions and econometric models (various regression functions in moments, quantiles, etc)
2. Introduction to forecasting univariate, multivariate, stationary, nonstationary time series
3. Forecast combination (for mean forecast, quantile forecasts, expectile forecasts, binary forecasts and classifiers, averaging, majority vote, democracy, bagging, boosting, model averaging)
4. Forecast evaluation and comparison in predictive regression models
5. Forecasting using factor models
6. Estimation of asymmetric loss and forecasting under asymmetric loss function
7. Forecasting using decompositions and constraints
8. Forecasting with nonlinear time series models