Topics in Advanced Econometrics (Spring 2014)

Model Selection & Multiple Testing

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Course Outline

The course will cover a range of topics that spans, model selection, overfitting problems, m-estimation, GMM, parameter instability and models for time-varying parameters. In the second part of the course focuses on multiple comparisons, such as the problem of determining the best forecasting model from a potential large pool of competing forecasts.

Grading Policy

Grades will be based on four problem sets and a term paper. Problem sets will have theoretical and empirical components. You need to obtain a data set for the term paper – ideally replicating the empirical work in an existing paper – and undertake a suitable robustness analysis using methods taught in this course.

Schedule:

Lecture 1  Introduction: Risk. Subset Selection, Mallow’s Criterion, AIC BIC James-Stein Shrinkage
MJM Chapter 18 (ask Marcia about this material)

Lecture 2  M-estimation. A general estimation framework that includes maximum likelihood, and quasi-maximum likelihood.
Hayashi Chapter 7

Lecture 3  GMM
Hayashi Chapter 3.4-3.6
Lecture 4  The Winner’s Curse of Model Selection.
working paper

Lecture 5  Cross Validation

Lecture 6  Criterion-Based Estimation
working paper

Lecture 7  Models for Time-Varying parameters and introduction to ARCH and GARCH models
Creal, Koopman, and Lucas

Lecture 8  Multiple Comparison.
Lecture 9  Test for Superior Predictive Ability

Lecture 10  Model Confidence Set

References


