

Course Syllabus

2007 CIDE - Econometrics Summer School

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Predictive and Simulation Based Specification Testing and Model Selection

Course Outline

Day I. Model Selection, Simulation, and Specification Testing

- (i) Model Selection via Conditional Kolmogorov-Smirnov Type Tests (see Andrews (1997) and Corradi and Swanson (2006b))
- (ii) Bierens Type Consistent Specification Type Tests (see Bierens (1982,1990), Bierens and Ploberger (1997))
- (iii) Simulation Based Model Selection Tests in Macroeconomics (see Corradi and Swanson (2007a))
- (iv) Simulation Based Model Selection Tests in Finance (see Bhardwaj, Corradi and Swanson (2007))

Day II. Optimal Forecasting with Quadratic and Generic Loss Function and Pairwise Accuracy Testing

- (i) Prediction: Sampling Schemes, Estimation Strategies, Structural Breaks and other Issues
- (ii) Optimal Forecasting (see Christoffersen and Diebold (1997))
- (iii) Testing Equal Predictive Accuracy with No Parameter Estimation Error (see Diebold and Mariano (1995)).

Day III. Parameter Estimation Error, Nested Models, and Specification Testing

- (i) Diebold-Mariano Tests Under Parameter Estimation Error (see West (1996) and Corradi and Swanson (2006a))
- (ii) Prediction and Model Selection Using Nested Models, Including Ex Ante Granger Causality Testing (see Clark and MacCracken (2001), Chao, Corradi and Swanson (2001), and Corradi and Swanson (2002)).
- (iii) Comparing Multiple Models (see White (2000) and Corradi and Swanson (2007b))

Day IV. Density Forecast Evaluation

- (i) Probability Integral Transform, Simulated CDFs and other Preliminaries
- (ii) Predictive Density Evaluation Using Macroeconomic Data (see Bai (1998), Corradi and Swanson (2006a,c), Diebold, Gunther and Tay (1998))
- (iii) Predictive Density Evaluation Using Financial Data (see Corradi and Swanson (2007c))

Day V. Predictive Density Construction and Model Selection via Simulation Techniques

(i) Realized Volatility and other Preliminaries

(ii) Predictive Density Construction and Evaluation for Stochastic Volatility (see Corradi, Distaso, and Swanson (2007a,b))

(iii) What Remains to be Done - Topics for Future Research and General Comments

Additional Notes:

(i) Bootstrap and related approaches to construction of asymptotically valid test critical values will be covered throughout the course.

Textbooks and References

(H*) Hamilton, James D.: **Time Series Analysis**, 1st Edition, Princeton University Press, 1994.

(DM) Davidson, Russell and James G. MacKinnon: **Estimation and Inference in Econometrics**, 1st Edition, Oxford University Press, 1993.

(GN) Granger, Clive W. J. and Paul Newbold: **Forecasting Economic Time Series**, 2nd Edition, Academic Press, 1986.

(G) Godfrey, L.G.: **Misspecification Tests in Econometrics**, 1st Edition, Cambridge, 1988.

(W) White, Halbert: **Asymptotic Theory for Econometricians**, 1st Edition, Academic Press, 1984.

* all texts are useful for background research, while those papers listed below that are cited in the **Course Outline** contain material presented in the mini-course.

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