

Advanced Econometrics: Forecasting and Predictability

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Tuesday 5.00 – 8.00
Edmond Safra Lecture Theater



Financial Econometrics II

- Linear Time-series Modeling (ARMA)
- Univariate Volatility Modeling
- Value-at-Risk Modeling
- Modeling Multiple Time-Series
- Correlation and Non-linear Dependence Modeling
 - ▶ All remaining components are time-series focused
 - ▶ Forecasting is a key component of each topic

- This course will focus on advanced forecast techniques
- Course divided into two components:
 1. Technical indicators and data snooping
 2. Forecasting in data-rich environments

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Part 1: Forecast Evaluation with Many Forecasts

- Reality Check
- Test of Superior Predictive Ability
- Model Confidence Set
- Stepwise Testing
 - ▶ Examples/assignments using technical trading rules
 - ▶ Futures and equity index data

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- Dynamic Factor Models
- Principle Component Regression
- The LASSO
- The Kalman Filter and missing data
- MIDAS
- Outliers and Structural Breaks
 - ▶ Examples/assignments drawn from Macro-Finance
 - ▶ Lower-frequency data: Quarterly or Monthly
 - ▶ Large number of predictors (>600)

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Assessment



- Assessment will be based completely on empirical work
- Heavy use of MATLAB and data
- Focus will be on replicating and extending ideas in recent papers
- 2 Assignments
 - ▶ 1 Groups of 2 or 3 (40%)
 - ▶ 1 Individual (60%)

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1. Bajgrowicz, P. and O. Scaillet. "Technical Trading Revisited: False Discoveries, Persistence Tests, and Transaction Costs", Working paper, (2008)
2. Barras, L., O. Scaillet and R. Wermers "False discoveries in mutual fund performance: Measuring luck in estimated alphas", *Journal of Finance*, 65, (2010), 179-216.
3. Hansen, P. "A test for superior predictive ability" *Journal of Business and Economic Statistics*, (2005).
4. Hasanhodzic, J and A. Lo. "Can Hedge-Fund Returns Be Replicated?: The Linear Case". Working Paper, (2006).
5. Hastie, T., Tibshirani, R., Friedman, J. *The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition* (2009)
6. Hsu and Kuan. "Re-Examining the Profitability of Technical Analysis with White's Reality Check and Hansen's SPA Test" Working paper, (2005)
7. Rapach, Strauss and Zhou. "Out-of-Sample Equity Premium Prediction: Consistently Beating the Historical Average". 2008
8. Rossi, A. "Asset Allocation with High-Dimensional Information Sets". Working Paper (2010)
9. Sullivan, R., A. Timmermann and H. White. "Data-Snooping, Technical Trading Rule Performance, and the Bootstrap". *The Journal of Finance* 54, (1999), 1647-1691.
10. White, H., "A Reality Check for Data Snooping". *Econometrica*, (2000).