

NATIONAL TAIWAN UNIVERSITY
Department of Finance
Topics in Financial Econometrics

Prof. C.-M. Kuan
ckuan@ntu.edu.tw

Spring 2011
3366–1072

Objective

The purpose of this course is to introduce various econometric methods that are readily applicable to financial and economic issues. For each method, I will discuss its properties and some empirical applications. I hope students do not just know the “recipe” of these methods but can understand why and how they work. Some of the methods are still new in the literature and may be developed to dissertation topics. Students are strongly encouraged to pursue this possibility and discuss with me your ideas.

Prerequisite

The students who wish to take this course are expected to have completed the Ph.D. econometrics core courses or something equivalent. The knowledge of programming language (matlab, Gauss, or R) would be helpful, but not required.

Reading

1. Campbell, J. Y., A. W. Lo and A. C. MacKinlay (1997). *The Econometrics of Financial Market*, Princeton University Press.
2. Kim, C.-J. and C. R. Nelson (1999). *State-Space Models with Regime Switching*, MIT Press.
3. Koenker, R. (2005). *Quantile Regression*, Cambridge University Press.
4. Kuan, C.-M. (2011). Lecture notes, Available at <https://ceiba.ntu.edu.tw/992tfe> or homepage.ntu.edu.tw/~ckuan (please constantly check for new versions).
5. Singleton, K. J. (2006). *Empirical Dynamic Asset Pricing*, Princeton University Press.

Course Outline

Topic 0: Review of ARMA and GARCH Models

Topic 1: Model Diagnostic Tests

1. Tests of Serial Uncorrelatedness
2. Tests of Serial Independence
3. Tests of Time Reversibility
4. Application: Tests of Random Walk and GARCH Models

Topic 2: Markov Switching (MS) Models

1. MS Models for Conditional Mean
2. Model Estimation: Hamilton Filter
3. Hypothesis Testing
4. MS Models for Conditional Variance
5. Application 1: MS Models for Taiwan's Business Cycle
6. Application 2: MS Default Intensity Model

Topic 3: Bootstrap and Tests of Inequality Constraints

1. Bootstrap
2. Asymptotic Properties
3. Stationary Bootstrap
4. Tests without Data Snooping Bias
5. Application 1: Testing the Predictability of Technical Analysis
6. Application 2: Testing Mutual Fund Performance

Topic 4: Generalized Method of Moments

1. GMM Estimation Methods
2. Asymptotic Properties
3. Test of Over-Identifying Restrictions
4. Application

Topic 5: Quantile Regressions (QR)

1. Conditional Quantiles
2. Model Estimation
3. Wald, Rank-Score and LR tests
4. Application 1: QR on Return-volume relations
5. Application 2: Quantile Treatment Effects
6. QR with Endogeneity
7. Unconditional Quantile Partial Effects

Office Hours: Tuesday 4–6 pm or by appointment.

Grading

1. The grade is determined by homework assignments (20%), a term paper (50%) and paper presentation (30%).
2. The term paper may be a review of an econometrics topic or an original econometric research. A presentation of the term paper is also required. The term paper may be a joint work with no more than two co-authors. The guidelines for the term paper and presentation will be distributed later.