Econ 4120
Applied Forecasting Methods

Course Outline

Prof. Merrick LI
Department of Economics
The Chinese University of Hong Kong
Email: merrickli@cuhk.edu.hk

Teaching Team

Instructor: Prof. Merrick Li
☎: (852) 3943 9275
✉: merrickli@cuhk.edu.hk
Office: ELB 935
Office hour: By Appointment

TA: ZHANG, Haotian
✉: htzhang@link.cuhk.edu.hk
TA: MEI, Ziwei
✉: zwmei@link.cuhk.edu.hk
Office hour: By appointment with TAs

Course Overview

This course is aimed at the students who wish to gain a working knowledge of time series and forecasting methods as applied in economics and finance. The emphasis is on the understanding of the intuition underlying theoretical innovations and an ability to apply them. We will discuss topics in classic time series analysis, including stationary processes, ARMA processes, the modelling and forecasting with ARMA processes, Model Selection, Vector Autoregressions, Cointegration, etc. Part of this course will focus on applications in financial modelling. A tentative list of topics to be discussed include stock return predictability, GARCH and variants of GARCH models, the modelling and forecasting of realized volatility, etc.

Prerequisite

Students should be familiar with basic linear regression, linear algebra, basic probability and statistics, and (multivariate) calculus.

Course Assessment

1. Class Participation: 5%

2. Five Assignments: 25%
3. Midterm Exam: 25%
4. Final Exam: 45%

Software

The course will require use of the econometric package *Stata* to work on real data. The students can get access to Stata via the computing cluster in the Department of Economics: `https://scrp.econ.cuhk.edu.hk/guide/stata`. We will also use Matlab to demonstrate the mechanics of various methods. The students do not need any prior knowledge on Stata or Matlab.

References

- Lecture Slides
- Supplementary textbooks:
  (1) Stock, James and Mark W. Watson, *Introduction to Econometrics*, 4th E.[1]
  (2) Brockwell, Peter J., and Richard A. Davis. *Introduction to Time Series and Forecasting*. Springer, 2016.[2]
  (3) Hyndman, Rob and George Athanasopoulos, 2021. *Forecasting: Principles and Practice*, 3rd E.[3]

Honesty in Academic Work

Attention is drawn to university policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at `http://www.cuhk.edu.hk/policy/academichonesty/`.

[1] You can read the book online here.
[2] The book is downloadable in the CUHK library, see here.
[3] The book is available online: `https://otexts.com/fpp3/`.