

Time Series and Economic Forecasting

Course title - Intitulé du cours	Time Series and Economic Forecasting
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	KIM JIHYUN - YAMASHITA MAMIKO
Other teacher(s) - Autre(s) enseignant(s)	
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Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

- Jihyun Kim and Mamiko Yamashita
- jihyun.kim@tse-fr.eu and yamashita.mamiko@tse-fr.eu
- Office hours: by appointment by an e-mail

Course's Objectives - Objectifs du cours :

This course will cover the statistical and econometric techniques needed to conduct quantitative research in the estimation of time series models, forecasting of financial markets, and the modelling of asset price volatility. This knowledge will enable students to understand and interpret empirical findings in financial markets. On completing this course, the students will understand the central technical issues in the statistical analysis of financial time series. They will be comfortable with the use of standard econometric software such as EViews, R, STATA, and MATLAB to undertake their own research.

Prerequisites - Pré requis :

All students are expected to have taken an econometrics course and an introductory statistics course. For those of you who are already familiar with a statistical software package (EViews, STATA, R, MATLAB, GAUSS, etc.), you are welcome to continue using it.

Grading system - Modalités d'évaluation :

- Online Quizzes 10%

- Assignments: 20%
- Midterm Exam: 35%
- Final Exam: 35%

Bibliography/references - Bibliographie/références :

- James D. Hamilton (1994) Time Series Analysis, Princeton.
- Tsay, Ruey S. (2010) Analysis of Financial Time Series, 3th ed., John Wiley & Sons
- Diebold, F.X. (2017), Forecasting in Economics, Business, Finance and Beyond, Department of Economics, University of Pennsylvania, <http://www.ssc.upenn.edu/~fdiebold/Textbooks.html>

Session planning - Planification des séances :

Mamiko will teach the first 5 weeks and Jihyun will teach the second 5 weeks.

(Mamiko)

1. Introduction to Time Series: Stationarity and Nonstationarity
2. Principles of Forecasting
3. Stationary Process (AR, MA, ARMA)
4. Conditional Heteroskedasticity (ARCH, GARCH), volatility forecasting

(Jihyun)

5. Nonstationary Process
6. Deterministic trend and seasonality
7. Regressions with Financial Time Series
8. Vector Autoregressive (VAR) Model
9. Factor Models

Distance learning – Enseignement à distance :

The students will have the lecture notes (slides) and the recorded lectures (videos), as well as online multiple choice quizzes. Every Thursday at 2pm-4pm, we will also have a Zoom session. We will explain more in detail about the organization of the course during the first Zoom meeting on September 10.