

TEMAS AVANZADOS DE ECONOMETRÍA (2017-18)**DATOS GENERALES**

Código 41243

Créditos ECTS 5

Departamentos y áreas

Departamento	Área	Dpt. Resp.	Dpt. Acta
FUNDAMENTOS DEL ANÁLISIS ECONÓMICO	FUNDAMENTOS DEL ANALISIS ECONOMICO	SÍ	SÍ

Estudios en que se imparte

MÁSTER UNIVERSITARIO EN ECONOMÍA CUANTITATIVA

Contexto de la asignatura

Esta asignatura se imparte en inglés.

Es un curso opcional de Econometría Financiera en el segundo año del Máster de Economía Cuantitativa.



OBJETIVOS

Objetivos específicos aportados por el profesorado (2017-18)

Este curso se imparte en inglés.

This course mainly focus on market risk models, that is, volatility and correlation forecast models, their implementation and evaluation. We employ the two principal mathematical programming languages, R and Matlab.

CONTENIDOS

Contenidos teóricos y prácticos (2017-18)

Este curso se imparte en inglés.

Chapter 1: Stylized facts of asset returns

1. Introduction.
2. Volatility clusters.
3. Non-normality and fat tails.
4. Statistical tests for fat tails.
5. Modeling Non-normality by using alternative densities.
6. Nonlinear dependence. Long run correlations.
7. Non-elliptical world. Introduction to copulas.

Chapter 2: Risk measures

1. Introduction.
2. Volatility.
3. Value-at-Risk (VaR)
4. Expected Shortfall. (ES)
5. Expected Shortfall and Quantile regression.

Chapter 3: Univariate Volatility modeling

1. Introduction.
2. Simple volatility models. Moving average models and EWMA.
3. GARCH and conditional volatility.
4. Maximum likelihood estimation of volatility models.
5. LR tests, Goodness-of-fit measures, graphical analysis, etc.
6. Other GARCH-type models. Leverage effects and asymmetry.

Chapter 4: Multivariate volatility models

1. Introduction.
2. Multivariate EWMA.
3. Constant conditional correlations (CCC).
4. Dynamic conditional correlations (DCC).
5. Maximum likelihood estimation.

Chapter 5: Implementing risk forecasts

1. Introduction.
2. Historical simulation.
3. Risk measures and parametric methods.
4. VaR with time-dependent volatility.

Chapter 6: Backtesting and stress testing

1. Introduction.
2. Backtesting.
3. Significance of backtests. Bernoulli coverage test, testing independence of violations, etc.
4. Expected shortfall backtesting.
5. Stress testing. Scenario analysis, etc.

Chapter 7: Extreme value theory (EVT)

1. Introduction.
2. Asset returns and fat tails.
3. Applying EVT. Generalized Pareto distribution, Hill method, etc.



EVALUACIÓN

Instrumentos y criterios de Evaluación 2017-18

Este curso se imparte en inglés.

Students will receive several homeworks and they have to hand them in when specified. The homeworks are graded, and the students will have to discuss their solutions in class. These homeworks will count for 50% of the grade. The other 50% will be a final exam. The final exam can be retaken in July.

Tipo	Criterio	Descripción	Ponderación
EXAMEN FINAL	Final exam	There will be a final exam during the exam period	50
ACTIVIDADES DE EVALUACIÓN DURANTE EL SEMESTRE	Problem sets and presentations	There will be problem sets. Cooperation in the assignments is encouraged, but they should be written up individually	50