

Syllabus

Course description

Course title	Advanced Quantitative Methods, Module 1: Time series analysis
Course code	29054
Scientific sector	SECS-P/05
Degree	PhD Economics and Finance
Semester	1 st semester
Year	2021-22
Credits	2
Modular	3

Total lecturing hours	10
Total lab hours	-
Total exercise hours	-
Attendance	Strongly suggested, but not required
Prerequisites	-
Course page	-

Specific educational objectives	The course introduces econometric modelling of time series prices and volatility. Then, it extends to tools for nonlinear models. Strong emphasis is placed on the application of the models to real financial and economic data.
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Lecturer	Francesco Ravazzolo
Scientific sector of the lecturer	SECS-P/05
Teaching language	English

Office hours	please refer to the lecturer's timetable
Lecturing assistant	None
Teaching assistant	None
List of topics covered	Review of different estimation methods (OLS, NLS, ML, GMM, Bayesian). Time-Series Analysis models and methods for predicting future variables: specification, inference and forecasting. (Monte Carlo) Simulation Methods.
Teaching format	The course will combine in-class explanation of the background material, problem-solving and case discussions. Students will be expected to participate actively in class work, which will give them the opportunity to apply theoretical concepts to realistic situations. In order to benefit from this approach, it is important that all students come to class fully prepared.

Learning outcomes	<p>Knowledge and understanding The aim of the course is to equip students with a working knowledge of important econometric techniques used in econometrics and complete the course Quantitative Research Methods on time-series analysis. Students correctly specify, estimate and test the econometric models discussed during the lectures and possess the ability to properly interpret the results provided by these procedures. Ability to perform all the mentioned econometric techniques by using appropriate softwares (MATLAB, R).</p> <p>Making judgments Ability to formulate models and to implement appropriate econometric tools for the analysis and forecasting of financial data.</p> <p>Communication skills Ability to present in a consistent and precise manner the results obtained from the econometric analysis.</p> <p>Learning skills Ability to understand and analyze financial data from a quantitative perspective.</p> <p>The learning outcomes include:</p> <ul style="list-style-type: none"> • Knowledge and understanding quantitative methodologies used by students in economics, business and management field, including data collection , data processing and analysis, model design and analytics • Applying knowledge and understanding to techniques for analyzing quantitative data in economics, business and management • Making judgments regarding the suitability of particular methods to research in economics and business. • Making informed choices in regard to quantitative methods for decision-making, selection and application of research methods using statistical software, IT and communication skills, available statistical information and data. • Can communicate with their peers, research community, public and policy-makers on making necessary judgement and corrections to policy and research. • Can be expected to be able to promote, within academic and professional contexts, technological and socio-economic advanced knowledge
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Assessment	Solution of case studies: Case studies will be assigned during the course to be completed in writing and sometimes presented in class.
Assessment language	English
Evaluation criteria and criteria for awarding marks	Assignments and final exam.
Required readings	Main textbooks: Selection of papers provided by the teacher
Supplementary material	-