

MODULE DESCRIPTOR

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| MODULE TITLE | FINANCIAL STATISTICS | | |
| MODULE CODE | MA3878 | CREDIT VALUE | 10 CREDITS (5 ECTS) |
| CAMPUS | UCLAN CYPRUS | | |
| SCHOOL | SCHOOL OF SCIENCE | | |

MODULE AIMS

This module aims to introduce students to advanced statistical techniques and their empirical applications in analyzing and modeling financial data and examining particular hypotheses related to financial markets.

MODULE CONTENT

Throughout the module, students will use the statistical software package Matlab.

Introduction: What is econometrics and 'financial' econometrics, types of data, econometric modeling and econometric modeling in finance.

A brief overview of the classical linear regression model:

Assumptions, OLS estimation, finite sample and asymptotic properties of the OLS estimator, hypothesis testing (t-test, F-test, LM test).

Example: CAMP in MATLAB.

Univariate time series modelling and forecasting: Moving average processes, autoregressive processes, the partial autocorrelation function, ARMA processes, forecasting and time series in finance.

Example: Time series modelling and forecasting in MATLAB.

Multivariate models: Simultaneous equations model (SEM): Estimation and inference, Vector Autoregressive (VAR) and Vector Error Correction Models (VECM): estimation and inference

Example: Estimation and forecasting in finance using SEM, VAR and VECM (MATLAB).

Modeling long-run relationships in finance: Stationarity and unit root testing, Cointegration and VECM, *Johansen and Juselius approach*.

Example: Testing for cointegration and modelling cointegrated systems in finance using MATLAB.

Modeling volatility and correlation: Univariate and multivariate models for volatility, autoregressive conditionally heteroscedastic (ARCH) model, generalised ARCH (GARCH), asymmetric GARCH, EGARCH GARCH-in-mean, estimation and volatility forecasting. Modelling and forecasting covariances and correlations.

Example: Multivariate GARCH for the CAPM using MATLAB.

INTENDED LEARNING OUTCOMES

| On successful completion of this module a student will be able to: | |
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| 1. | Analyze financial data and establish their specific characteristics. |
| 2. | Use and test procedures associated with, key econometric techniques. |
| 3. | Estimate and analyze econometric models using the various tools and techniques. |
| 4. | Apply econometric techniques and associated tests using MATLAB on financial data. |
| 5. | Interpret and evaluate econometric output from MATLAB |

TEACHING METHODS

The class contact will consist of teaching classes together with workshops. Teaching classes will introduce new material and provide examples. Tutorials have no new material introduced. Students will attempt problems during the tutorials. Key elements of the learning strategy are regular sessions during which problems are attempted. Throughout the week students will be given a list of problems to attempt.

Due to the theoretical nature of the material in this ten-credit module, the assessment will be by examination.

ASSESSMENT METHODS

The module is assessed through a Written Examination.