FORECASTING ENERGY PRICES AND VOLATILITY WITH STATA

GENERAL DESCRIPTION

The modelling and forecasting of energy prices and volatility has become of utmost importance in the current turbulent times. The statistical features of energy data, which tends to follow periodic patterns and exhibit spikes, non-constant means and non-constant variances, renders the task of forecasting energy prices somewhat challenging.

The objective of TStat's "Forecasting Energy Prices and Volatility with Stata" course is to provide participants with the specific analytical tools to undertake a rigorous and in-depth analysis of prices in international energy markets. The programme covers a wide range of econometric methods currently available to researchers and practitioners, such as: i) univariate and multivariate time series models to estimate and forecast prices and ii) univariate and multivariate GARCH models for the estimation and forecast of price volatility.

In common with TStat's training philosophy, throughout the course the theoretical sessions are reinforced by case study examples, in which the course tutor discusses current research issues, highlighting potential pitfalls and the advantages of individual techniques. The intuition behind the choice and implementation of a specific technique is of the utmost importance. In this manner, course leaders are able to bridge the "often difficult" gap between abstract theoretical methodologies, and the practical issues one encounters when dealing with real data. At the end of the course, participants are expected to be able to autonomously implement the theories and methodologies discussed in the course.

TARGET AUDIENCE

Researchers and professionals working either: i) in the energy and related sectors, needing to model energy price and demand, and ii) on trading desks in financial institutions. Economists based in research policy institutions. Students and researchers in engineering, econometrics and finance needing to learn the econometrics methods and tools applied in this field.

PREREQUISITE

Participants should have a knowledge of the inferential statistics and introductory econometric methods illustrated in Brooks (2019).

This module aims to introduce Stata, so participants do not need to possess any previous knowledge of the software.

PROGRAM

SESSION I: MODELS FOR ENERGY PRICES AND RETURNS

1. Analysis of the features of energy prices and returns:
    *   Stationarity
    *   Autocorrelation
    *   Conditional heteroscedasticity
    *   Fat tails

2. Univariate time series models for forecasting energy prices and returns (ARMA, ARIMA, SARIMA);

3. Vector autoregressive (VAR) models for forecasting energy prices/returns and for understanding interdependences between energy markets.

SESSIONS II: MODELS FOR ENERGY PRICES VOLATILITY

1. Univariate GARCH model for forecasting energy markets volatility. Modelling leverage effect and inverse leverage effect with asymmetric GARCH models (EGARCH, TGARCH, GJR-GARCH, APARCH).

2. Modelling cross-markets correlations and testing for volatility spillovers with MGARCH models: Diagonal VECH (DVECH), Constant Conditional Correlation (CCC), Dynamic Conditional Correlation (DCC) models.

COURSE LEADERS

Dr Elisabetta Pellini, Centre for Econometric Analysis, Bayes Business School, City, University of London (UK).

Professor Giovanni Urga, Centre for Econometric Analysis, Bayes Business School, City, University of London (UK).

SUGGESTED READING (PRE - AND POST-COURSE)

Introductory Econometrics for Finance. Brooks, C., (2019). Cambridge University Press, 4th edition.

Boffelli, S., and Urga, G.,(2016). Financial Econometrics Using Stata. Stata Press Publication, StataCorp LP, College Station, Texas.

DATES AND LOCATION

Due to the ongoing Public Health situation, the **2022 edition** of this training course will be offered ONLINE on a part-time basis. The course program has therefore been restructured into two modules which will be offered on the 10th-11th of March from 10:00 am to 1:30 pm Central European Time (CET).

REGISTRATION FEES

Students*: € 355.00
Ph.D Students: € 455.00
University: € 505.00
Commercial: € 675.00

*To be eligible for student prices, participants must provide proof of their **full-time** student status for the current academic year. Our standard policy is to provide all **full-time students**, be they Undergraduates or Masters students, access to student participation rates. Part-time master and doctoral students who are also currently employed will however, be allocated academic status.

Fees are subject to VAT (applied at the current Italian rate of 22%). Under current EU fiscal regulations, VAT will not however applied to companies, Institutions or Universities providing a valid tax registration number.

The number of participants is limited to 8. Places, will be allocated on a first come, first serve basis. The course will be officially confirmed, when at least 5 individuals are enrolled.

Course fees cover: course materials (handouts and datasets to be used during the course), a temporary licence of Stata valid for 30 days from the beginning of the course.

Individuals interested in attending this training course should contact TStat Training to ask for a registration form. The completed application should then be returned to TStat by the 1st of March 2022.

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at https://www.tstattraining.eu/training/forecasting-energy-prices-volatility-stata-ol/.

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