

GENERAL DESCRIPTION

The availability of large datasets has resulted in increased interest in Factor Models analysis. Large factor models, increasingly popular in economics and finance, use a few latent factors to characterize the co-movement of economic and financial variables in a high dimensional datasets of interest both to private and public sectors. Empirical applications tend to focus i) macroeconomics: on the analysis of the effects of common shocks (such as for instance changes in the interest rate and/or inflation) on the time series behaviour of relevant variables; as a result, factors models are being increasingly used by economists for economic policy analysis; ii) finance: on the evaluation of patterns of financial markets behaviour concerning risks pertaining to a specific investment, to capture the sensitivity of asset returns as a function of one or more factors. To summarise, factors estimated from high dimensional data provide efficient instruments to control for unobserved heterogeneity and help to improve forecast.

This course reviews the theory on estimation and statistical inference of large factor models. Participants should leave the course being in a position to autonomously implement, with the aid of the Stata routines utilized during the sessions, the theories and methodologies discussed during the course of the workshop.

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.

TARGET AUDIENCE

The course is of particular interest to researchers and professionals working in central banks, investment banks and the financial and insurance sectors wishing to acquire the necessary statistical/econometrical toolset in order to be able to independently conduct factor model analysis.

COURSE REQUISITES

Participants should have a working knowledge of econometrics or statistics. Previous experience with statistical software will facilitate practical sessions.

PROGRAM

SESSION I: FACTOR ANALYSIS

1. Introduction
2. Principal Components
3. Factor Analysis in Practice:
 - Identification of the matrix on which run the factor analysis
 - Decide on how many factors
 - Define the criterion to extract the factors, determine the rotation criterion of the orthogonal axis
 - Evaluation of the goodness of the model, compute the factor scores.
4. Determining the number of factors
5. Estimation via Maximum Likelihood

SESSION II: LARGE DIMENSIONAL FACTOR MODELS

1. Static Factor Models, Dynamic Factor Models
2. Factor Estimation: Maximum likelihood vs asymptotic principal components
3. Determining the number of factors: Bai and Ng static and dynamic factor estimation
4. Stock and Watson - Dynamic factors estimation
5. Amengual and Watson - Dynamic factors estimation
6. Factor-Augmented regressions and Factor-Augmented vector-Autoregression (FAVAR)
7. Instrumental variables methodology
8. Panel regression model with a factor structure in the errors
9. Non stationary data: static and dynamic factors
10. High dimensional covariance estimation

SESSION III: APPLICATIONS

1. Applying PCA to Bond Portfolio Management
2. Using PCA to Control Interest Rate Risk
3. Factor Analysis in Bond Risk Factors
4. Macroeconomic Factor Models
5. Sharpe's single Factor Model
6. General multiple Factor Model
7. Barra US Equity Factor Model
8. Fama-French Approach
9. Estimation of Industry Factor Model Factors

USEFUL TEXTS

- S. Boffelli and G. Urga (2016), Financial Econometrics Using Stata. Stata Press Publication

DATE AND LOCATION

The course will be held in Frankfurt am Main, on the 15th June 2018.

REGISTRATION FEES

Students*: € 295.00

University: € 475.00

Non-Profit/Public Research Centres: € 600.00

Commercial: € 700.00

*To be eligible for student prices, participants must provide proof of their **full-time** student status for the current academic year.

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

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

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.

To maximize the usefulness of this course, we strongly recommend that participants bring their own laptops with them, to enable them to actively participate in the empirical sessions.

Individuals interested in attending the training course, must return their completed registration forms to TStat by the 26th of May 2018.

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at <https://www.tstattraining.eu/training/factor-models-big-data/>.

CONTACT INFORMATION:

Monica Gianni

TStat Training | Kleebergstraße, 8
D-60322 Frankfurt am Main

TStat S.r.l. | Via Rettangolo, 12-14
I-67039 Sulmona (AQ)
T. +39 0864 210101

www.tstattraining.eu | www.tstat.eu | training@tstat.eu

