

# MODELLING VOLATILITY AND CONTAGION IN FINANCE

## GENERAL DESCRIPTION

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The growth in financial instruments during the last decade has resulted in a significant development of econometric methods (financial econometrics) applied to financial data. The objective of our Modelling Volatility and Contagion in Finance course is to provide participants with a comprehensive overview of the principal methodologies, both theoretical and applied, adopted for the analysis of risk in financial markets. To this end, the course focuses on the modelling and forecasting of financial time series of asset returns; the modelling of cross market correlations, volatility spillovers and contagion in financial asset markets. During the course, a number of alternative GARCH models and models of conditional correlations will be reviewed.

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

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The course is of particular interest to: i) Master and Ph.D. Students and Researchers in public and private research centres, and ii) professionals employed in risk management

in the following sectors: asset management, exchange rate and market risk analysis, front office and research in investment banking and insurance, needing to acquire the necessary econometric/statistical toolset to independently conduct an empirical analysis of financial risk.

## PREREQUISITE

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

## PROGRAM

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### SESSION I: VOLATILITY MODELS - GARCH

1. Analysis of financial time series features:
  - Stationarity
  - Autocorrelation
  - Conditional heteroscedasticity
  - Fat tails
2. Modelling and forecasting asset returns volatility with univariate ARCH and GARCH models:
  - ARCH, GARCH, GARCH-in-mean
  - Integrated GARCH
  - Risk Metrics
  - Modelling asymmetric shock impacts on volatility with asymmetric GARCH models:
    - SAARCH
    - EGARCH
    - GJR
    - TGARCH
    - APARCH
    - News Impact Curve

### SESSIONS II: MULTIVARIATE VOLATILITY (MGARCH) MODELS AND CONTAGION

1. Multivariate GARCH models:
  - Diagonal VECH (DVECH)
  - Constant Conditional Correlation (CCC)
  - Dynamic Conditional Correlation (DCC) models
2. Assessing contagion in financial markets:
  - Measuring cross-market correlation coefficients
  - Higher moments contagion
  - Estimating Markov switching regressions
3. Empirical applications:
  - Forecasting volatility and correlations in financial markets
  - Contagion between markets

## COURSE LEADER

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Professor Giovanni URGA, Centre for Econometric Analysis, Cass Business School, London (UK) and University of Bergamo (Italy).

## SUGGESTED READING (PRE - AND POST-COURSE)

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

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

## DATES AND LOCATION

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Due to the current Public Health situation, the 2020 edition of this training Course will be offered **ONLINE** on a part-time basis. The course program has therefore been restructured into two, three hour, sessions which will be offered on the 31st August and 1st September 2020 at the following times:

**Time Zone (1)** from 8.00 am to 11.30 am CEST

**Time Zone (2)** from 3.00 pm – 6.30 pm CEST

in order to facilitate participation for our clients based in both Europe/Middle East and North and South America.

## REGISTRATION FEES

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Full-time Students\*: € 355.00

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.

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, 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.

Individuals interested in attending the training course should contact TStat Training to ask for a registration form. The completed application should then be returned to TStat by **11th August 2020**.

Further details regarding our registration procedures, including our commercial terms and conditions, can be found at <https://www.tstattraining.eu/training/modelling-volatility-contagion-ol/>.

## CONTACT INFORMATION:

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