Financial modelling and forecasting

Online course

Centre for Econometric Analysis
Delivered by: Professor Giovanni Urga

Fees:

£180 City students, alumni, staff

£210 External students

£360 External

A 15% discount is available for groups of three or more participants

Course overview

The course covers several theoretical and empirical topics in financial econometrics providing a comprehensive presentation of the econometric methods applied to finance. Topics include: forecasting and forecast evaluation, estimation methods such as GMM and MLE, univariate and multivariate GARCH models, and realised and stochastic volatility models, measurement techniques and tests for contagion, principal components and factor analysis, the use of Autometrics in model selection in presence of a large number of regressors. The theory is illustrated in practice modelling interest rates, asset prices and forex time series at several temporal frequencies.

Benefits

- You will be introduced to the statistical analysis of time series, autoregressive–moving-average (ARMA) models, and forecasting evaluation criteria
- You will learn theoretical and practical tools of univariate, multivariate GARCH volatility models
- You will learn to identify and measure contagion between markets
- You will be taught theoretical and practical tools of high frequency data and the impact of market announcements
- You will practise on practical econometric and financial problems.

Target audience

This course is particularly useful to professionals working in the financial industry, consultancy firms, Central Banks, regulatory authorities, public and private research centres.

Course prerequisites

Participants are expected to have a quantitative background. Knowledge of the fundamentals of econometrics, derivatives, quantitative asset pricing theory will help participants to obtain the maximum benefit from the course.

Contents

Day 1 : Four hours online

Topic 1: Forecasting of Conditional Mean and Volatility.

- Estimation and Forecasting: ARMA (p,q) Processes, Exponential Smoothing (ES), Holt-Winter's ES (HWES).
- Forecast Evaluation: ME, MAE, MSE, RMSE, Theil's U, Diebold-Mariano test. Combination of Forecasts.

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Professor Giovanni Urga

Giovanni is Professor of Finance and Econometrics and Director of the Centre for Econometric Analysis at Bayes Business School and Professor of Econometrics at the University of Bergamo (Italy). His research interests are in panel and factor models, financial econometrics, modelling (systemic, liquidity, premia) risk in (shadow) banking and (shadow) insurance and cross-market correlations, asset pricing, modelling and testing for multiple breaks and jumps. He has published in the Journal of Econometrics, Journal of Business and Economic Statistics, Journal of Banking and Finance, Journal of Financial Econometrics, Journal of Applied Econometrics, Journal of Financial Markets, Journal of Money Credit and Banking, Econometric Theory, International Journal of Forecasting, International Journal of Money and Finance and others. He is an Associate Editor for Empirical Economics, and has been a guest editor for the Journal of Econometrics and the Journal of Business and Economic Statistics. He has presented his works in several international conferences and seminars. He has been consultant in several international Institutions and he is consultant for Italian investment banks.

- Empirical Applications: modelling and forecasting returns and equity premium, term structure and the bond markets, foreign exchange rates. Yield curve forecasting
- Univariate G@RCH models
- Empirical Applications: forecasting volatility in financial markets, volatility of asset returns, term structure and bond markets, foreign exchange rates.

Day 2: Four hours online

Topic 2: Modelling Contagion and High Frequency Data

- Multivariate G@RCH models
- Contagion Analysis: cross-market correlation coefficients, Markov switching regressions, higher moments contagion
- Empirical Applications: forecasting volatility and correlations in financial markets. Contagion between markets
- Realized volatility. (Macro) Announcements, jumps, cojumps. Econometric modelling with Autometrics
- Empirical Applications: empirical applications using European government bond Spreads, Fed Funds futures' implicit interest rates, asset prices, forex.

Recommended reading

The following textbooks and journal articles are recommended for this course:

Brockwell, P.J and R. A. Davis (2016), Introduction to time series and forecasting, Spinger.

Castle, J. L., Clements, M. P., and D. F. Hendry (2019), Forecasting an essential introduction, *Yale University Press*

Diebold X. Francis (2017), Forecating in economics, business, finance and beyond

Pesaran, H. M. (2015), Time series and panel data econometrics, *Oxford University Press*.

Linton, O. (2019), Financial econometrics, models and methods, *Cambridge University Press*.

Elliott, G. and A. Timmermann (2016), "Forecasting in Economics and Finance".

Timmermann, A. (2018), "Forecasting Methods in Finance".

Registration, payment and cancellation policy

Payment of course fees is required prior to the course start date.

In case a course is cancelled, registered participants will receive the full refund.

Registration closes seven calendar days prior to the start of the course.